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1842
2nd Series
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TRANSACTIONS

OF THE

HORTICULTURAL SOCIETY

OF

LONDON.

SECOND SERIES.

VOL. II.

MDCCCXXXV.—MDCCCXLI.

Mo. Bot. Garden,
1897.

LONDON:

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1842.

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The Committee appointed by the Horticultural Society to direct the publication of the Papers read before them, take this opportunity to inform the Public, that the grounds of their choice are, and will continue to be, the importance and singularity of the subjects, or the advantageous manner of treating them, without pretending to answer for the certainty of the facts, or the propriety of the reasonings, contained in the several Papers so published; which must still rest on the credit or judgment of their respective Authors.

It is likewise necessary, on this occasion, to remark, that it is an established rule of this Society, to which they will always adhere, never to give their opinion, as a body, upon any subject, either of Nature or Art, that comes before them. And therefore the thanks which are proposed from the Chair, to be given to the Authors of such Papers as are read at the General Meetings, or to the Persons who send fruits, or other vegetable productions, or exhibit Inventions of various kinds to the Society, are to be considered in no other light than as a matter of civility, in return for the respect shewn to the Society by these communications.

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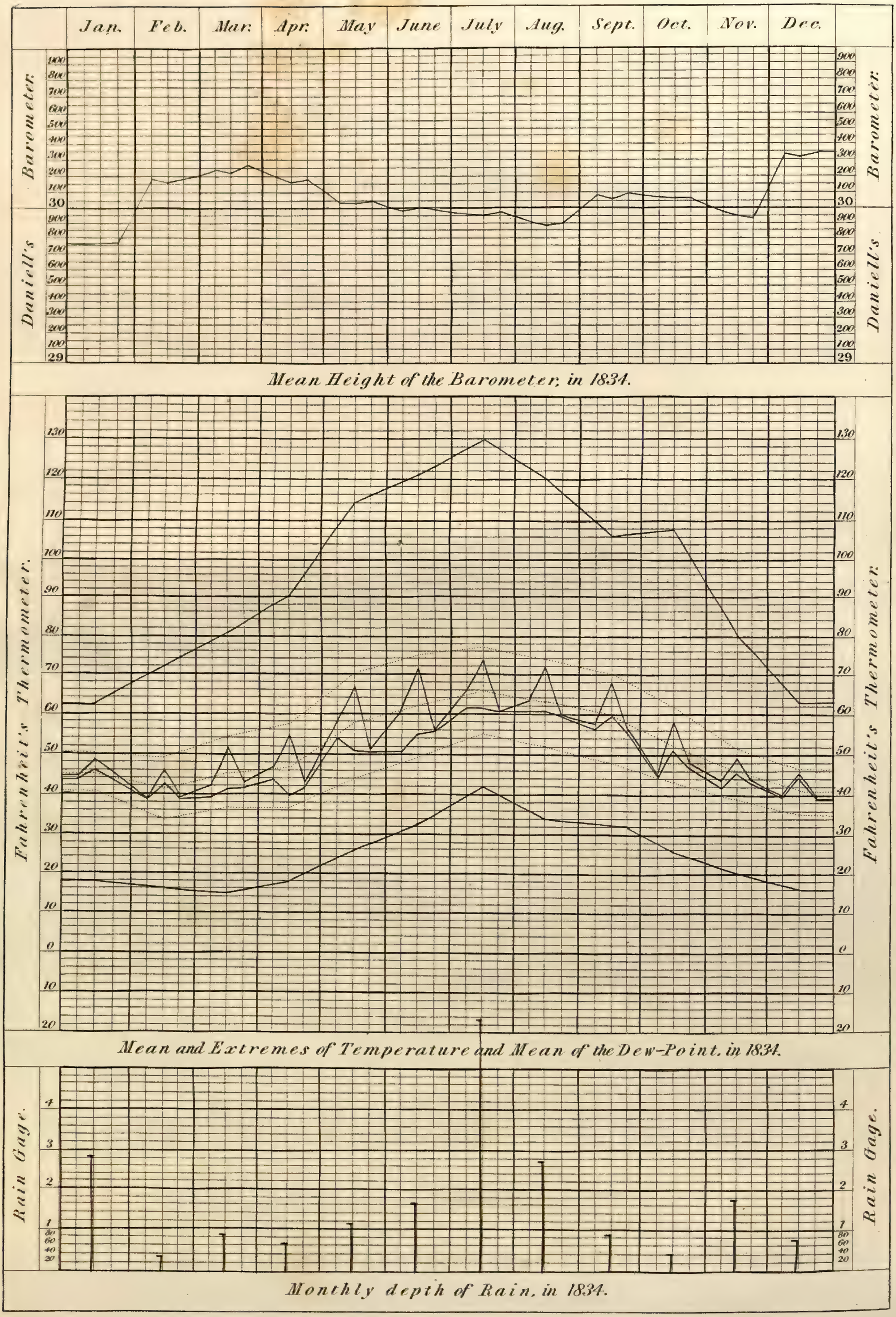
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Barometer.
Daniell's
100
80
70
60
50
40
30
20
10
29
900
800
700
600
500
400
300
200
100
Mean Height of the Barometer, in 1834.
Fahrenheit's Thermometer.
130
120
110
100
90
80
70
60
50
40
30
20
10
0
10
20
Mean and Extremes of Temperature and Mean of the Dew-Point, in 1834.
Rain Gage.
4
3
2
1
80
60
40
20
Monthly depth of Rain, in 1834.

1. *Journal of Meteorological Observations made in the Garden of the Horticultural Society at Chiswick during the year* 1834. *By Mr.* Robert Thompson.

No alteration has taken place in the manner of keeping this Journal.

JANUARY.

		Morning.					Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	29.893	39	35	4	Very Clear	29.926	44	33	11	Clear & very Fine	30.084	38	38	—	Very Clear
☾ Th.	2	30.305	35	30	5	Ditto	30.390	39	30	9	Ditto	—.414	34	34	—	Overcast
F.	3	—.114	44	44	—	Slight Rain	29.990	49	49	—	Cloudy	29.911	51	51	—	Rain
S.	4	—.021	49	46	3	Cloudy	30.145	45	39	6	Ditto	30.188	42	42	—	Hazy
S.	5	—.084	48	48	—	Hazy	—.021	49	46	3	Ditto and Fine	—.003	45	45	—	Overcast
M.	6	29.822	47	44	3	Cloudy	29.703	50	50	—	Showers	29.403	49	49	—	Heavy Rain
T.	7	—.607	40	40	—	Fine	—.632	44	37	7	Fine	—.528	39	39	—	Overcast
W.	8	—.217	45	45	—	Cloudy	—.266	49	49	—	Heavy Rain	—.349	44	44	—	Foggy
● Th.	9	—.416	40	40	—	Foggy	—.389	41	41	—	Hazy	—.172	44	44	—	Rain
F.	10	—.112	40	40	—	Cloudy	—.159	45	43	2	Fine	—.257	42	42	—	Ditto
S.	11	—.413	43	43	—	Clear	—.440	50	46	4	Ditto	—.201	48	48	—	Ditto
S.	12	—.119	48	48	—	Rain	—.071	51	51	—	Cloudy	—.165	47	47	—	Ditto [Showers
M.	13	—.636	45	45	—	Slight Rain	—.665	51	51	—	Stormy & Wet	—.691	50	50	—	Windy with
T.	14	—.669	47	47	—	Cloudy	—.646	50	47	3	Overcast	—.493	49	46	3	Fine
W.	15	—.302	45	45	—	Heavy Rain	—.534	48	42	6	Fine	—.616	47	47	—	Slight Rain
Th.	16	—.522	45	45	—	Fine	—.124	53	53	—	Cloudy	—.615	51	51	—	Cloudy
F.	17	—.421	50	50	—	Heavy Rain	—.399	50	50	—	Rain	—.367	45	45	—	Fine, Lightning
☽ S.	18	—.566	45	42	3	Clearing	—.653	49	49	—	Stormy Showers	—.765	43	43	—	Fine
S.	19	—.684	40	40	—	Overcast	—.590	45	45	—	Hazy	—.615	41	41	—	Rain
M.	20	30.006	40	40	—	Fine	30.053	47	44	3	Overcast	—.978	43	43	—	Overcast
T.	21	29.933	45	45	—	Cloudy & Cool	29.889	53	53	—	Rain	— 869	50	50	—	Very Fine
W.	22	—.659	51	51	—	Cloudy	—.617	50	50	—	Heavy Rain	—.968	44	44	—	Ditto
Th.	23	—.784	52	52	—	Rain	—.811	56	56	—	Cloudy	—.897	54	54	—	Drizzly
F.	24	—.997	54	54	—	Fine	—.905	55	55	—	Ditto	—.884	54	54	—	Rain
○ S.	25	30.098	47	44	3	Ditto	30.172	51	40	11	Clear and Fine	30.121	45	45	—	Hazy
S.	26	29.876	52	52	—	Overcast	29.869	55	55	—	Cloudy, Drizzly	29.942	51	50	1	Light Haze
M.	27	—.871	46	46	—	Rain	—.829	49	49	—	Hazy with Rain	—.697	51	51	—	Cloudy
T.	28	—.489	52	52	—	Ditto	—.749	55	51	4	Fine	—.721	40	40	—	Stormy & Wet
W.	29	30.224	32	25	7	Clear & Frosty	30.289	35	27	8	Ditto & Clear	30.449	29	29	—	Clear & Frosty
Th.	30	—.360	36	36	—	Overcast	—.276	43	40	3	Overcast	—.197	44	44	—	Overcast
F.	31	—.152	47	47	—	Slight Showers	—.146	48	45	3	Ditto and Fine	—.195	40	40	—	Ditto
		29.751	44.80	43.90	.90		29.753	48.35	45.67	2.67		29.763	44.96	44.84	.12	

JANUARY.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	44	36	52	31	NW	Brisk			The last month of the preceding year was remarkable for the great quantity of rain, and in the present, there were only six days in which more or less did not fall, the amount being more than an inch above the average. The winds, frequently strong or brisk, were, with a few exceptions, either from a south, south-west, or west direction. The temperature was only twice below the freezing point; and a warmer month of January, throughout, has perhaps seldom or ever occurred. The direct power of the solar rays was less than usual, from the almost constantly clouded or overcast state of the atmosphere, yet the mean temperature was nearly 10° above the average. Such was the effect of this on vegetation that, by the end of the month, Almond trees were to be seen generally in blossom.
2	45	30	52	26	——	Little		.04	
3	51	44	52	42	W	Ditto		.03	
4	51	40	52	39	N	Ditto			
5	45	49	52	42	SW	Ditto			
6	50	36	52	31	S	Ditto		.20	
7	46	35	53	31	SW	Brisk		.06	
8	46	37	48	38	E	Little		.26	
9	44	38	47	32	S	Ditto		.20	
10	49	41	51	37	——	Ditto		.10	
11	51	46	55	44	——	Ditto		.14	
12	51	41	56	35	——	Brisk		.09	
13	52	47	58	44	SW	Strong		07	
14	50	42	52	38	S	Little		.09	
15	56	42	60	37	W	Brisk		.10	
16	55	42	59	44	S	Ditto		.31	
17	52	43	53	39	SW	Ditto		.11	
18	50	38	52	30	S	Strong		.02	
19	46	37	50	30	W	Little		.06	
20	52	46	54	42	SW	Ditto			
21	53	44	54	38	——	Ditto		.01	
22	54	44	54	40	W	Ditto		.57	
23	+58	53	58	50	SW	Brisk		.01	
24	55	47	56	41	——	Strong		.04	
25	54	37	60	34	W	Little		.06	
26	55	46	56	43	SW	Brisk		.05	
27	54	48	54	47	——	Little		.07	
28	56	33	+62	27	W	Brisk		.06	
29	39	—28	50	—18	NW	Little			
30	47	36	49	34	SW	Ditto		.12	
31	48	34	60	27	S	Ditto			
	50.29	40.64	53.09	36.48			2.87		

Mean Pressure from the 3 daily observations 29.755 inches.
—— Temperature ..... Ditto ..... 46°.03
—— Dew Point ..... Ditto ..... 44°.80
—— Degree of Dryness ... Ditto 1.23
—— Degree of Moisture .. Ditto ..... .973
—— Force of Vapour .... Ditto ..... .328 inch.
Least observed degree of Moisture ..... .682
Maximum Temperature in the Shade ..... 58°
Minimum Temperature in ditto ..... 28°
Maximum Temperature in the Sun ..... 62°
Minimum of Terrestrial Radiation ..... 18°
Mean Temperature of external Air ..... 45°.46

WINDS.

North.....	1 days.	N. East.....	0 days.
South.....	9 ..	S. East.....	0 ..
East.....	1 ..	N. West.....	3 ..
West.....	6 ..	S. West.....	11 ..

31 days.

Amount of Rain..... 2.87 inch.

FEBRUARY.

			Morning.					Noon.					Night.				
1834.		Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
☾	S.	1	30.189	35	35	—	Slight Frost	30.145	45	35	10	Fine	30.090	36	36	—	Overcast & Fine
	S.	2	—.025	40	36	4	Frosty&Foggy	29.955	40	36	4	Slight Haze	29.900	45	45	—	Fine
	M.	3	—.034	38	38	—	Clear	30.021	47	47	—	Fine	—.995	40	40	—	Overcast
	T.	4	29.897	44	40	4	Overcast	29.834	49	45	4	Ditto	—.859	42	42	—	Cloudy & Fine
	W.	5	—.875	39	39	—	Clear & Fine	—.840	50	50	—	Slight Rain	—.763	47	47	—	Rain
	Th.	6	30.038	33	33	—	Foggy	30.052	47	47	—	Very Fine	30.081	40	40	—	Fine [Fog
	F.	7	—.146	31	31	—	Ditto & Frosty	—.070	41	41	—	Foggy	—.196	30	30	—	Frosty with dense
●	S.	8	—.191	29	29	—	Dense Fog	—.174	36	36	—	Ditto	—.252	28	28	—	Ditto
	S.	9	—.411	32	32	—	Ditto	—.422	36	36	—	Ditto	—.482	33	33	—	Dense Fog
	M.	10	—.436	29	29	—	Frosty, with Fog	—.387	43	43	—	Fine	—.277	40	40	—	Slight Rain
	T.	11	—.146	43	43	—	Rain	—.135	45	45	—	Ditto	29.997	40	40	—	Overcast
	W.	12	29.663	43	43	—	Ditto	29.721	46	46	—	Showery	—.882	33	33	—	Clear
	Th.	13	30.026	32	32	—	Frosty	30.108	46	39	7	Fine	30.287	32	32	—	Slightly Overcast
	F.	14	—.322	35	35	—	Slight Fog	—.328	46	40	6	Ditto	—.350	39	39	—	Fine
	S.	15	—.315	40	40	—	Foggy	—.309	46	46	—	Ditto	—.359	36	36	—	Do. with Clouds
☽	S.	16	—.427	36	33	3	Ditto	—.421	42	42	—	Cold Haze	—.484	28	28	—	Clear & Frosty
	M.	17	—.335	25	25	—	Sharp Frost	—.270	43	43	—	Clear & Fine	—.269	42	42	—	Overcast
	T.	18	—.194	44	42	2	Hazy & Cold	—.034	47	47	—	Overcast	—.072	45	45	—	Ditto
	W.	19	29.991	45	42	3	Overcast	29.952	44	44	—	Ditto	—.008	49	46	3	Ditto
	Th.	20	30.174	40	40	—	Ditto & Fine	30.194	43	43	—	Cloudy	29.967	48	45	3	Cloudy & Windy
	F.	21	—.059	41	41	—	Fine [Frost	—.171	48	36	12	Very Fine	30.289	36	36	—	Fine
	S.	22	—.435	35	35	—	Ditto, with slight	—.425	47	40	7	Ditto	—.406	40	37	3	Ditto
○	S.	23	—.300	46	33	3	ColdandOvercast	—.265	53	48	5	Cloudy	—.258	47	45	2	Do. and Overcast
	M.	24	—.127	49	49	—	Cloudy	—.080	54	49	5	Ditto	—.207	46	46	—	Fine
	T.	25	—.466	37	37	—	Slight Frost	—.510	48	34	14	Clear & Fine	—.517	35	35	—	Clear & Ditto
	W.	26	—.474	38	38	—	Overcast	—.384	52	42	10	Ditto	—.286	35	35	—	Clear
	Th.	27	—.162	48	48	—	Ditto	—.159	56	52	4	Cloudy	—.143	51	51	—	Cloudy
	F.	28	—.198	54	54	—	Small Rain	—.328	49	49	—	Slight Rain	—.496	46	46	—	Overcast & Fine
			30.180	38.60	37.89	.71		30.167	46.03	42.89	3.14		30.184	39.60	39.21	.39	

FEBRUARY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	45	29	57	21	SE	Little		
2	46	36	58	27	——	Ditto		
3	51	37	60	34	S	Ditto		
4	50	33	52	25	——	Ditto		
5	52	32	54	26	——	Ditto	.10	
6	50	29	54	22	SW	Ditto		
7	42	27	46	22	——	Ditto		
8	37	25	42	18	N	Ditto		
9	40	27	45	24	SE	Ditto		
10	47	32	56	28	S	Ditto	.03	
11	47	31	54	24	NW	Ditto	.07	
12	47	39	54	35	W	Ditto	.07	
13	49	31	63	27	NW	Ditto		
14	48	34	58	26	W	Ditto		
15	44	32	56	25	NE	Ditto		
16	45	—24	58	—16	——	Ditto		
17	47	39	63	37	W	Ditto		
18	46	45	48	43	——	Ditto		
19	51	38	56	32	SW	Brisk		
20	51	37	60	29	——	Little	.03	
21	50	30	67	23	W	Ditto		
22	52	40	67	32	SW	Ditto		
23	52	47	60	45	——	Brisk		
24	54	32	62	25	S	Ditto	.01	
25	56	28	+72	20	SW	Little		
26	56	31	68	25	S	Ditto		
27	56	45	57	44	——	Brisk	.01	
28	+59	44	57	42	E	Little	.05	
	48.93	34.06	57.28	28.47			0.37	

The mean temperature of this month was about 4° below that of the preceding; still it was $3\frac{1}{2}$° above the average. Occasionally the nights were frosty, more especially those of the 8th and 16th, yet the beauty of the Almonds in blossom remained surprisingly conspicuous throughout the month. The quantity of rain was very limited, scarcely amounting to $\frac{4}{10}$ of an inch. Winds from a south or west direction continued to be most prevalent.

Mean Pressure from the 3 daily observations	30.177 inches.
—— Temperature ..... Ditto	41°.41
—— Dew Point ..... Ditto	40°.01
—— Degree of Dryness .... Ditto	1°.40
—— Degree of Moisture .. Ditto	.942 inch.
—— Force of Vapour .... Ditto	.280
Least observed degree of Moisture	.617
Maximum Temperature in Shade	59°
Minimum Temperature in ditto	24°
Maximum Temperature in Sun	72°
Minimum of Terrestrial Radiation	16°
Mean Temperature of External Air	41°.49

WINDS.

North.....	1 days	N. East.....	2 days
South.....	7 ..	S. East.....	3 ..
East.....	1 ..	N. West.....	2 ..
West	7 ..	S. West.....	5 ..

28 days.

Amount of Rain ..... 0.37 inch.

MARCH.

		Morning.					Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
	S.	1	30.473	49	49	—	Cloudy	30.460	54	54	—	Cloudy	30.403	49	49	—	Overcast
☾	S.	2	—.301	49	47	2	Fine	—.307	56	47	9	Very Fine	—.410	48	48	—	Cloudy
	M.	3	—.417	45	45	—	Hazy	—.387	53	50	3	Overcast & Do.	—.293	48	48	—	Overcast
	T.	4	—.162	52	52	—	Fine	—.124	55	48	7	Very Fine	29.962	51	50	1	Ditto
	W.	5	29.793	52	52	—	Cloudy & Windy	29.753	55	55	—	Cloudy	—.569	52	52	—	Rain & Windy
	Th.	6	—.985	41	41	—	Clear	30.039	52	36	16	Fine	30.007	48	46	2	Clear
	F.	7	30.230	44	43	1	Very Fine	—.250	58	48	10	Ditto	—.314	46	46	—	Fine and Do.
	S.	8	—.329	48	48	—	Fine	—.321	57	47	10	Ditto	—.386	50	48	2	Ditto
	S.	9	—.496	53	48	5	Ditto	—.470	58	49	9	Ditto	—.463	46	46	—	Ditto
●	M.	10	—.375	45	43	2	Ditto	—.338	57	49	8	Ditto	—.403	45	45	—	Ditto
	T.	11	—.496	48	46	2	Ditto	—.504	56	49	7	Ditto	—.498	40	40	—	Ditto
	W.	12	—.492	40	40	—	Foggy	—.524	55	49	6	Ditto	—.451	48	48	—	Overcast
	Th.	13	—.432	46	46	—	Rain	—.418	49	49	—	Drizzly	—.382	37	37	—	Clear
	F.	14	—.404	35	35	—	Frosty	—.375	54	38	16	Fine	—.463	45	45	—	Overcast
	S.	15	—.555	43	35	8	Cold and Dry	—.547	52	32	20	Ditto	—.569	33	33	—	Clear
	S.	16	—.575	42	39	3	Fine	—.491	53	39	14	Ditto	—.515	37	37	—	Very Clear
	M.	17	—.511	43	40	3	Cloudy & Cold	—.419	45	38	7	Cloudy & Cold	—.523	40	35	5	Clear
☽	T.	18	—.587	38	26	12	Ditto	—.552	43	28	15	Cold and Dry	—.579	31	25	6	Ditto
	W.	19	—.596	30	26	4	Sharp Frost	—.554	46	25	21	Ditto	—.537	31	26	5	Ditto
	Th.	20	—.491	35	40	5	Cold and Dry	—.484	45	39	6	Cloudy	—.468	36	35	1	Ditto
	F.	21	—.459	37	33	4	Frosty	—.422	47	37	10	Hazy & Cold	—.343	41	37	4	Overcast
	S	22	—.260	41	33	8	Fine	—.151	54	44	10	Fine	—.125	41	41	—	Clearing
	S	23	—.058	40	40	—	Ditto	29.914	50	42	8	Ditto	29.770	51	51	—	Cloudy
	M.	24	29.814	46	36	10	Ditto	—.845	48	36	12	Cold and Dry	—.877	40	38	2	Clear
○	T.	25	—.899	37	27	10	Clear & Cold	—.976	43	25	18	Ditto	30.117	32	30	2	Ditto
	W.	26	30.185	31	29	2	Sharp Frost	30.200	46	20	26	Very Dry	—.191	39	35	4	Overcast
	Th.	27	—.129	45	42	3	Fine	—.110	56	42	14	Cloudy & Fine	—.008	47	47	—	Cloudy
	F.	28	29.814	48	48	—	Overcast	29.559	50	50	—	Rain	29.647	43	43	—	Clear
	S.	29	—.687	45	40	5	Clear	—.703	52	40	12	Fine	—.814	37	37	—	Ditto
	S	30	—.946	40	40	—	Ditto	—.919	53	35	18	Ditto	—.896	43	43	—	Rain
	M.	31	—.892	40	40	—	Ditto	—.952	46	33	13	Do. and Cold	30.026	40	40	—	Fine
			30.249	42.84	39.97	2.87		30.228	51.54	41.06	10.48		30.258	42.42	41.32	1.10	

MARCH.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	56	45	57	44	W	Little		This month, like the preceding, was dry and favourable for the operations of the garden. There were no frosts of any severe duration, that on the night of the 18th was the greatest, the temperature being 8° below the freezing point. It may be remarked that in this, as well as in the preceding month, the greatest frost came in the train of a north-east wind, and such will be observed to be very generally, if not always the case, in spring. With a temperature averaging several degrees above the mean, and a more than usual heat in the ground for this period of the season, vegetation, previously much excited, continued to advance considerably.
2	56	47	66	44	SW	Ditto		
3	57	43	67	41	S	Ditto		
4	56	44	69	39	——	Brisk		
5	57	50	71	46	SW	Ditto	.10	
6	57	39	58	33	——	Ditto	.01	
7	+60	43	73	38	——	Little	.04	
8	59	44	67	38	S	Brisk		
9	59	41	72	36	W	Ditto		
10	59	39	78	32	SW	Ditto		
11	56	32	73	26	E	Ditto		
12	57	43	72	42	W	Ditto	.03	
13	50	30	69	24	E	Ditto		
14	53	40	74	39	NE	Ditto		
15	47	28	62	21	——	Ditto		
16	53	33	+81	25	E	Ditto		
17	45	34	57	27	NE	Ditto		
18	46	—24	65	—15	——	Brisk		
19	47	26	65	17	E	Little		
20	47	25	55	16	——	Ditto		
21	48	35	56	30	SE	Ditto		
22	54	36	69	29	SW	Ditto	.01	
23	52	44	62	39	NW	Brisk		
24	52	31	66	22	——	Ditto		
25	52	25	72	15	N	Ditto		
26	52	35	73	29	NW	Little		
27	57	44	72	42	W	Ditto	.04	
28	51	40	56	35	SW	Strong	.10	
29	53	30	70	22	——	Brisk	.03	
30	54	36	76	33	W	Little	.50	
31	53	35	71	28	——	Brisk		
	53.38	36.80	67.54	31.19			0.86	

Mean Pressure from the 3 daily observations 30.245 inches.
—— Temperature ..... Ditto ..... 45°.60
—— Dew Point ..... Ditto ..... 40°.78
—— Degree of Dryness ... Ditto ..... 4°.81
—— Degree of Moisture .. Ditto ..... .835
—— Force of Vapour ..... Ditto ..... .224 inch.
Least observed degree of Moisture ..... .397
Maximum Temperature in the Shade .... 60°
Minimum Temperature in ditto ..... 24°
Maximum Temperature in the Sun ..... 81°
Minimum of Terrestrial Radiation ..... 15°
Mean Temperature of External Air ..... 45°.09

WINDS.

North	1 days.	N. East	4 days.
South	3 ..	S. East	1 ..
East	5 ..	N. West	3 ..
West	6 ..	S. West	8 ..

31 days.

Amount of Rain..... 0.86 inch.

APRIL.

		Morning.					Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
☾ T.	1	30.140	43	39	4	Clear	30.187	52	35	17	Very Fine	30.288	43	43	—	Overcast
W.	2	—.289	47	47	—	Rain	—.274	50	50	—	Rain	—.305	50	50	—	Drizzly
Th.	3	—.302	52	52	—	Fine	—.359	54	41	13	Overcast	—.515	36	36	—	Clear
F.	4	—.471	40	40	—	Ditto	—.397	54	43	11	Fine	—.394	48	48	—	Fine
S.	5	—.377	47	43	4	Ditto	—.307	57	43	14	Very Fine	—.334	45	45	—	Ditto
S.	6	—.382	46	43	3	Ditto	—.392	58	40	18	Do. & light Haze	—.383	40	40	—	Ditto
M.	7	—.364	41	41	—	Ditto	—.320	57	42	15	Very Fine	—.315	48	44	4	Slight Haze
T.	8	—.383	44	36	8	Cold & Dry	—.376	49	35	14	Cold dry Haze	—.393	42	30	12	Dry Haze
● W.	9	—.383	42	30	12	Bleak & Cold	—.280	46	30	16	Bleak & Cold	—.350	38	30	8	Cold and Dry
Th.	10	—.331	42	30	12	Clear & Ditto	—.304	49	19	30	Very Dry	—.272	34	32	2	Clear and Cold
F.	11	—.232	42	35	7	Ditto	—.197	46	29	17	Cold and Dry	—.128	40	32	8	Ditto
S.	12	—.131	42	35	7	Ditto	—.031	42	42	—	Hail Shower	—.181	36	36	—	Do. after Hail
S.	13	—.259	43	43	—	Cloudy & Cold	—.271	46	35	11	Cloudy & Cold	—.333	37	37	—	Cold
M.	14	—.397	39	39	—	Frosty Haze	—.393	53	30	23	Fine	—.421	35	35	—	Ditto
T.	15	—.436	41	41	—	Ditto	—.405	51	31	20	Ditto & Dry	—.426	40	40	—	Clear
☽ W.	16	—.385	44	41	3	Slight Haze	—.338	55	31	24	Ditto	—.322	39	37	2	Ditto
Th.	17	—.288	44	44	—	Hazy	—.213	57	35	22	Ditto	—.208	45	43	2	Ditto
F.	18	—.209	51	45	6	Fine	—.192	61	40	21	Fine	—.226	43	43	—	Ditto
S.	19	—.261	48	43	5	Ditto	—.213	63	43	20	Very Fine	—.336	45	45	—	Ditto
S.	20	—.312	48	44	4	Overcast	—.284	58	47	11	Ditto	—.312	44	44	—	Ditto
M.	21	— 341	45	44	1	Hazy	—.332	55	35	20	Fine	—.311	39	39	—	Ditto
T.	22	—.322	45	38	7	Fine	—.274	57	39	18	Cloudy & Do.	—.233	43	41	2	Very Fine
○ W.	23	—.327	49	41	8	Do. & Overcast	—.237	55	47	8	Ditto	—.338	43	43	—	Cloudy
Th.	24	—.343	46	33	13	Fine	—.305	52	35	17	Ditto	—.262	37	37	—	Overcast
F.	25	—.185	47	42	5	Overcast	—.161	57	42	15	Dry Haze	—.129	44	39	5	Clear
S.	26	—.093	52	38	14	Fine	—.043	57	36	21	Fine	29.912	41	40	1	Ditto
S.	27	29.733	50	39	11	Very Fine	29.548	68	45	23	Cloudy	—.318	52	52	—	Rain
M.	28	—.305	58	58	—	Cloudy	—.346	67	52	15	Fine	—.374	55	55	—	Ditto
T.	29	—.400	60	60	—	Slight Rain	—.421	61	61	—	Rain	—.439	55	55	—	Cloudy
☾ W.	30	—.400	53	53	—	Rain	—.583	60	60	—	Ditto	—.642	50	50	—	Rain
		30.192	46.36	41.90	4.46		30.166	54.90	39.77	15.13		30.176	42.90	41.37	1.53	

APRIL.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	54	40	73	36	N	Little		.04	This month was very different from the three last. South and westerly winds gave place to those from the north and east; and for the greater part of the month the radiating thermometer was considerably below the freezing point. On the night of the 18th it was at 18°, whilst that in the shade was at 26°; and both were within a degree of being equally low as far in the month as the 24th. The blossoms of Pears, Plums and Apricots were so far destroyed as to occasion a very general failure in these crops. There was but little rain in the course of the month. In short, its general character was frosty, with cold and dry north-east winds.
2	53	49	62	47	SW	Ditto		.07	
3	57	30	67	22	N	Ditto			
4	58	45	80	41	——	Ditto			
5	60	41	87	35	NW	Ditto			
6	58	30	73	22	E	Ditto			
7	63	39	90	33	N	Ditto			
8	50	38	53	36	E	Ditto			
9	42	28	64	20	NE	Brisk			
10	50	30	70	22	——	Ditto			
11	49	33	69	26	N	Ditto			
12	50	32	74	24	NE	Ditto		.11	
13	51	—26	72	—18	——	Ditto			
14	56	27	75	19	SE	Ditto			
15	61	35	73	30	——	Little			
16	60	34	80	27	——	Ditto			
17	60	39	79	33	——	Ditto			
18	62	33	80	27	——	Ditto			
19	66	38	84	30	NE	Ditto			
20	66	34	85	29	——	Ditto			
21	58	32	84	27	——	Ditto			
22	59	34	84	32	——	Ditto			
23	56	40	73	36	——	Ditto			
24	53	27	60	19	——	Ditto			
25	57	35	79	26	SE	Ditto			
26	57	32	79	27	——	Ditto			
27	+69	53	87	48	——	Ditto		.07	
28	68	46	+90	41	SW	Brisk		.10	
29	62	51	76	50	S	Ditto		.15	
30	59	48	69	47	SW	Ditto		.11	
	57.13	36.63	72.36	31.00				0.65	

Mean Pressure from the 3 daily observations 30.178 inches.
—— Temperature ..... Ditto ..... 48°.05
—— Dew Point ..... Ditto ..... 41°.01
—— Degree of Dryness ... Ditto ..... 7°.04
—— Degree of Moisture .. Ditto ..... .813
—— Force of Vapour. .... Ditto .... . .292 inch.
Least observed degree of Moisture ..... .347
Maximum Temperature in Shade ..... 69°
Minimum Temperature in ditto ..... 26°
Maximum Temperature in the Sun ..... 90°
Minimum of Terrestrial Radiation ..... 18°
Mean Temperature of External Air..... 46°.88

WINDS.

North.....5	days.	N. East.....10	days.
South.....1	..	S. East.....8	..
East.....2	..	N West.....1	..
West.....0	.	S. West.....3	..

30 days.

Amount of Rain.....0.65 inch.

MAY.

1834.	Days.	Morning. Barom.	Morning. Hygrometer.			Morning. Weather.	Noon. Barom.	Noon. Hygrometer.			Noon. Weather.	Night. Barom.	Night. Hygrometer.			Night. Weather.
Th.	1	29.665	53	53	—	Rain	29.723	59	59	—	Rain	29.785	51	51	—	Overcast
F.	2	—.893	58	58	—	Very Fine	—.875	62	62	—	Cloudy	—.882	51	51	—	Fine
S.	3	—.966	59	59	—	Ditto	30.088	67	50	17	Very Fine	—.997	44	44	—	Clear
S.	4	—.973	68	58	10	Ditto	29.950	76	60	16	Hot	—.931	65	57	8	Sultry
M.	5	—.932	64	64	—	Rain	—.970	67	67	—	Heavy Rain	30.111	51	51	—	Clear
T.	6	30.289	57	57	—	Fine	30.303	69	61	8	Very Fine	—.366	55	55	—	Fine
W.	7	—.446	59	54	5	Ditto	—.430	72	55	17	Ditto	—.403	60	58	2	Ditto
● Th.	8	—.322	58	58	—	Foggy	—.233	73	60	13	Ditto	—.091	61	58	3	Do. & Overcast
F.	9	29.860	66	66	—	Fine Dew	29.825	74	56	18	Overcast	29.778	59	58	1	Ditto
S.	10	—.922	66	64	2	Fine	—.952	62	46	16	Fine	—.913	59	57	2	Ditto
S.	11	—.837	63	52	11	Ditto	—.738	72	52	20	Ditto	—.729	56	53	3	Do. wth Lightning
M.	12	—.733	59	59	—	Slight Rain	—.746	68	55	13	Cloudy & Do.	—.715	54	54	—	Rain
T.	13	—.617	59	59	—	Heavy Rain	—.595	65	65	—	Heavy Showers	—.636	50	50	—	Fine
W.	14	—.764	56	51	5	Fine	—.784	63	51	12	Fine	—.788	55	53	2	Cloudy
Th.	15	—.854	62	62	—	Ditto	—.851	72	50	22	Ditto	—.956	52	52	—	Very Clear
☽ F.	16	—.939	58	53	5	Ditto	—.880	70	54	16	Ditto	—.709	50	50	—	Fine
S.	17	—.498	55	55	—	Ditto	—.474	55	55	—	Rain	—.435	40	40	—	Ditto
S.	18	—.451	54	54	—	Cloudy & Do.	—.462	56	47	9	Stormy Clouds	—.615	46	46	—	Clear & Cold
M.	19	—.775	57	57	—	Fine	—.850	62	47	15	Fine	30.078	50	50	—	Very Clear
T.	20	30.303	55	55	—	Ditto	30.328	65	41	24	Very Fine	—.426	48	48	—	Ditto
W.	21	—.501	60	54	6	Very Fine	—.461	73	52	21	Ditto	—.495	52	52	—	Ditto
○ Th.	22	—.435	58	51	7	Fine	—.382	64	43	21	Do. and Dry	—.358	52	50	2	Light Haze
F.	23	—.286	60	54	6	Ditto	—.312	70	46	24	Very Dry	—.318	55	55	—	Very Fine
S.	24	—.369	57	52	5	Ditto	—.365	71	49	22	Ditto	—.463	52	52	—	Cloudy
S.	25	—.460	57	45	12	Ditto and Dry	—.377	62	43	19	Ditto	—.370	45	45	—	Clear & Clold
M.	26	—.341	52	40	12	Ditto	—.321	61	38	23	Ditto	—.347	44	44	—	Ditto
T.	27	—.293	54	45	9	Ditto	—.257	66	40	26	Ditto	—.247	47	45	2	Clear
W.	28	—.212	53	43	10	Ditto	—.196	63	38	25	Ditto	—.181	44	42	2	Ditto
Th.	29	—.146	52	42	10	Ditto	—.108	63	42	21	Ditto	—.057	59	55	4	Cloudy & Fine
☾ F.	30	—.107	56	50	6	Ditto	—.135	68	53	15	Light dry Haze	—.182	52	49	3	Fine
S.	31	—.258	57	45	12	Ditto	—.230	70	48	22	Ditto	—.275	50	50	—	Clear
		30.046	58.12	53.83	4.29		30.040	66.45	51.13	15.32		30.052	51.58	50.49	1.09	

MAY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	63	38	80	33	SW	Little	.02	This month was more favourable to vegetation, although towards the end plants began to feel the want of moisture, no rain having fallen after the 17th, and at the same time a succession of north-east winds rendered the atmosphere very dry; whilst the moisture in the earth was also becoming deficient owing to the limited deposition in the three preceding months. The greater part of the rain fell on the 5th and 12th. The temperature was above an average. Frequently the radiating thermometer was below the freezing point, more especially on the night of the 28th, when it was at 26°: the concomitant circumstances were a north-east wind, and a very dry atmosphere.
2	67	48	93	43	S	Ditto		
3	75	40	94	34	SW	Ditto		
4	77	58	96	56	S	Ditto	.16	
5	70	42	85	38	——	Ditto	.44	
6	71	47	95	45	——	Ditto		
7	75	46	91	40	——	Ditto		
8	+80	48	96	43	SW	Ditto		
9	75	45	89	39	——	Ditto		
10	73	39	91	33	——	Ditto		
11	75	52	94	47	S	Ditto	.04	
12	67	51	79	51	——	Ditto	.40	
13	66	47	86	45	——	Ditto	.03	
14	69	52	85	48	——	Brisk	.02	
15	75	45	91	40	——	Little		
16	71	48	89	43	E	Ditto		
17	61	41	82	38	W	Brisk	.08	
18	64	38	86	33	SW	Ditto		
19	67	36	100	30	——	Ditto		
20	73	39	106	32	S	Ditto		
21	70	44	98	39	E	Ditto		
22	67	47	95	44	NE	Ditto		
23	72	45	98	41	E	Ditto		
24	74	47	98	46	——	Ditto		
25	64	39	102	32	NE	Ditto		
26	66	41	100	36	E	Ditto		
27	69	44	108	38	NE	Ditto		
28	66	—35	106	—26	E	Little		
29	76	48	+114	42	NE	Ditto		
30	73	44	106	40	E	Ditto		
31	72	40	101	33	NE	Ditto		
	70.42	44.32	94.64	39.61			1.19	

Mean Pressure from the 3 daily observations 30.046 inches
—— Temperature .....Ditto..... 58°.71
—— Dew Point .....Ditto..... 51°.81
—— Degree of Dryness ....Ditto..... 6°.90
—— Degree of Moisture ...Ditto..... .791
—— Force of Vapour .....Ditto..... .425 inch.
Least observed degree of Moisture ..... .412
Maximum Temperature in Shade ..... 80°
Minimum Temperature in ditto..... 35°
Maximum Temperature in the Sun .... 114°
Minimum of Terrestrial Radiation .... 26°
Mean Temperature of External Air ..... 57°.37

WINDS.

North.....	0 days.	N. East	5 days.
South.....	11 ..	S. East	0 ..
East	7 ..	N. West	0 ..
West.....	1 ..	S. West	7 ..

31 days.

Amount of Rain .....1.19 inch.

JUNE.

		Morning.					Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	30.329	65	47	18	Hot and Dry	30.281	76	43	33	Hot and Dry	30.294	56	53	3	Clear and Fine
M.	2	—.212	70	52	18	Ditto	—.168	80	45	35	Ditto	—.103	56	56	—	Ditto
T.	3	—.047	69	54	15	Slightly Clouded	—.050	64	64	—	Rain	—.024	56	56	—	Ditto
W.	4	—.011	62	53	9	Fine	29.901	66	48	18	Cloudy	29.724	54	54		Rain
Th.	5	29.681	62	62	—	Clearing	—.781	60	60	—	Ditto	—.973	50	50	—	Clear and Fine
F.	6	30.091	62	50	12	Fine	30.106	68	47	21	Very Fine	30.156	53	53	—	Ditto
● S.	7	—.123	65	55	10	Very Fine	—.090	76	62	14	Ditto	—.061	55	55	—	Very Fine
S.	8	29.879	61	45	16	Ditto	29.841	71	45	26	Clear & Ditto	29.830	54	54	—	Ditto
M.	9	—.778	66	55	11	Ditto	—.740	79	51	28	Fine, with Clouds	—.730	55	55	—	Ditto
T.	10	—.697	65	55	10	Cloudy	—.654	73	52	21	Ditto	—.676	54	54	—	Dark Clouds
W.	11	—.699	61	48	13	Fine	—.705	55	55	—	Heavy Rain	—.746	49	49	—	Showers
Th.	12	—.772	59	52	7	HeavyClouds	—.764	64	64	-	Showers	—.496	51	51	—	Heavy Rain
F.	13	—.740	58	52	6	Overcast	—.812	67	53	14	Cloudy	- .875	60	60	—	Overcast & windy
☽ S.	14	—.928	64	61	3	Cloudy	—.910	73	61	12	Do. and Fine	—.774	60	56	4	Fine, Thunder
S.	15	—.885	63	51	12	Very Fine	—.881	70	50	20	Fine	—.753	60	56	4	Fine
M.	16	—.674	62	52	10	Fine	—.644	67	42	25	Ditto	—.648	55	55	—	Overcast
T.	17	—.736	58	48	10	Cloudy & Cool	—.805	61	61	—	Showery	—.965	55	55	—	Clear and Fine
W.	18	30.063	63	54	9	Fine	30.049	68	53	15	Cloudy & Cold	30.020	63	63	—	Overcast, Fine
Th.	19	—.121	66	62	4	Overcast	—.096	78	58	20	Fine	—.096	57	57	—	Very Fine
F.	20	—.105	67	55	12	Very Fine	—.048	82	61	21	Very Hot	29.903	67	65	2	Ditto
○ S.	21	29.860	75	63	12	Very Hot	29.837	90	59	31	Ditto	—.800	68	68	—	Rain, Lightning
S.	22	—.904	68	58	10	Cloudy	—.953	75	55	20	Fine, with Clouds	30.099	59	59	—	Fine
M.	23	30.252	63	50	13	Fine	30.247	73	45	28	Hot and Dry	—.281	55	55	—	Clear & Ditto
T.	24	—.327	62	52	10	Ditto	—.299	70	50	20	Ditto	—.305	62	62	—	Overcast
W.	25	—.329	61	61	—	Hazy	—.319	76	60	16	Fine, with Clouds	—.261	64	64	—	Ditto and Fine
Th.	26	—.222	66	65	1	Cloudy	—.172	73	61	12	Ditto	—.077	62	62	—	Ditto
F.	27	—.096	61	61	—	Ditto	—.162	65	58	7	Ditto	—.284	50	50	—	Clear and Cool
S.	28	—.244	61	48	13	Fine	—.193	74	52	22	Fine	—.157	57	57	—	Cloudy & Fine
☾ S	29	—.176	65	50	15	Dry Haze	—.241	74	48	26	Ditto and Dry	—.339	53	51	2	Very Fine
M.	30	—.399	61	50	11	Fine	—.365	71	49	22	Ditto	—.308	53	51	2	Ditto
		29.979	63.70	54.03	9.67		30.003	71.30	53.73	17.57		29.992	56.76	56.20	.56	

JUNE.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	81	45	118	43	S	Little			A high temperature was maintained throughout the month. The Thermometer in the shade was several times above 80°; on the 20th it was 89°, and on the 21st at 91°; this was followed by lightning and rain at night. There was a greater degree of dryness in the atmosphere than is usual with the wind so prevalent from S., S. W., and W.; consequently the rain, which fell only in rather limited quantity, was soon evaporated. The night of the 14th was clear, with much thunder and lightning.
2	85	49	118	42	——	Ditto			
3	74	45	96	37	W	Ditto	.03		
4	70	49	105	44	SW	Ditto	.20		
5	65	—39	97	—33	NW	Ditto			
6	70	42	105	36	N	Ditto			
7	78	45	106	40	SE	Ditto			
8	78	40	108	36	N	Ditto			
9	78	51	98	44	S	Ditto			
10	73	43	91	38	SW	Brisk	.05		
11	64	42	88	40	S	Little	.22		
12	68	50	97	48	——	Brisk	.60		Mean Pressure from the 3 daily observations 29.991 inches.
13	69	55	97	51	SW	Ditto	.01		—— Temperature ..... Ditto ..... 63°.92
14	75	55	99	50	W	Ditto	.02		—— Dew Point ..... Ditto ..... 54°.65
15	74	56	102	52	——	Little			—— Degree of Dryness ... Ditto ..... 9°.26
16	68	51	89	47	——	Brisk	.01		—— Degree of Moisture .. Ditto ..... .740
17	67	47	81	42	——	Strong	.04		—— Force of Vapour ..... Ditto ..... .457 inch.
18	68	59	89	58	——	Brisk			Least observed degree of Moisture ..... .320
19	76	50	100	43	SW	Ditto			Maximum Temperature in Shade ..... 91°
20	89	57	116	52	S	Little			Minimum Temperature in ditto ..... 39°
21	+91	58	+121	56	——	Ditto	.38		Maximum Temperature in the Sun .....121°
22	73	47	100	40	W	Ditto			Minimum of Terrestrial Radiation ..... 33°
23	76	43	113	37	SW	Ditto			Mean Temperature of External Air ..... 62°.12
24	73	56	105	54	S	Brisk			
25	77	57	104	55	——	Little			WINDS.
26	73	54	105	52	W	Ditto	.07		North .....2 days | N. East .....1 days
27	67	41	104	35	NE	Ditto			South .....9 .. | S. East .....2 ..
28	74	49	107	43	SE	Ditto			East .....2 .. | N. West .....1 ..
29	72	46	106	40	E	Ditto			West .....8 .. | S. West.....5 ..
30	74	46	108	43	——	Ditto			30 days.
	75.00	49.23	101.76	44.36			1.63		Amount of Rain..... 1.63 inch.

JULY.

		Morning.					Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
T.	1	30.295	63	52	11	Fine	30.228	68	57	11	Cloudy	30.157	60	60	—	Cloudy
W.	2	—.080	60	56	4	Cloudy	—.035	71	56	15	Fine	—.044	58	54	4	Ditto
Th.	3	—.065	60	54	6	Overcast	—.056	72	59	13	Ditto	—.118	58	58	—	Clear and Fine
F.	4	—.151	64	54	10	Light haze	—.108	80	58	22	Very Hot	—.134	64	62	2	Very Fine
S.	5	—.086	63	58	5	Overcast	—.027	78	60	18	Very Fine	29.935	62	62	—	Heavy Rain
● S.	6	29.975	69	69	—	Hazy	29.987	68	68	—	Heavy Rain and Thunder	—.981	62	62	—	Showery
M.	7	—.979	68	68	—	Cloudy	—.993	78	61	17	Very Fine	—.928	62	62	—	Ditto
T.	8	—.868	73	73	—	Ditto	—.870	76	65	11	Ditto	30.017	62	62	—	Cloudy & Fine
W.	9	30.102	63	52	11	Ditto & Fine	30.135	68	54	14	Cloudy	—.130	57	57	—	Fine
Th.	10	—.064	69	58	11	Ditto	—.031	69	58	11	Ditto & Fine	—.050	59	59	—	Clear & Ditto
F.	11	—.056	70	58	12	Ditto	—.062	76	53	23	Fine	29.986	56	56	—	Ditto [ning
S.	12	29.845	71	63	8	Fine	29.789	80	62	18	Ditto	—.839	63	63	—	Fine, Light-
D S.	13	—.886	65	58	7	Ditto	—.869	75	52	23	Ditto	—.936	62	62	—	Fine
M.	14	30.005	66	55	11	Ditto	30.028	74	51	23	Ditto	30.139	62	62	—	Ditto
T.	15	—.223	67	57	10	Ditto [cast	—.218	80	60	20	Very Hot	—.218	62	62	—	Clear & Ditto
W.	16	—.242	69	61	8	Slightly over-	—.212	82	63	19	Ditto	—.182	65	65	—	Very Fine
Th.	17	—.142	75	63	12	Cloudless & hot	—.052	90	65	25	Excessively Hot, with scarcely a cloud.	—.014	66	64	2	Ditto & Clear
F.	18	29.761	73	66	7	Hot & dry E.W.	29.609	63	63	—	Rain	29.558	63	63	—	Thun.&Heavy
S.	19	—.461	64	64	—	Heavy rain	—.545	62	62	—	Heavy Rain	—.646	57	57	—	Cloudy [Rain
○ S.	20	—.700	63	63	—	Cloudy	—.683	71	71	—	Showery	—.709	58	58	—	Heavy Rain
M.	21	—.728	62	62	—	Ditto	—.751	65	65	—	Rain	—.810	56	56	—	Showers
T.	22	—.911	63	63	—	Hazy	—.944	71	63	8	Cloudy	30.010	58	58	—	Clearing
W.	23	30.037	64	64	—	Foggy [cast	30.012	75	60	15	Ditto & Fine	—.024	64	64	—	Cloudy
Th.	24	—.047	65	60	5	Slightly over-	—.040	76	60	16	Very Fine	—.020	61	61	—	Fine
F.	25	—.000	64	60	4	Fine	30.005	75	59	16	Fine [cast	29.999	58	58	—	Fine
S.	26	29.926	61	61	—	Very Fine	29.826	74	56	18	Ditto & over-	—.647	61	61	—	Cloudy
S.	27	—.634	59	59	—	Hazy	—.731	68	62	6	Ditto	—.885	56	56	—	Ditto
☾ M.	28	—.983	62	62	—	Ditto	—.989	73	60	13	Ditto [showrs	—.988	67	67	—	Rain & Thun.
T.	29	—.975	70	70	—	Ditto	—.951	81	81	—	Sultry with	—.934	69	69	—	Ditto
W.	30	—.867	67	67	—	Heavy Rain	—.873	77	70	7	Sultry	—.884	60	60	—	Clear & Fine,
Th.	31	—.834	64	64	—	Rain	—.795	70	70	—	Heavy Rain	—.813	64	64	—	Foggy
		29.965	65.67	61.10	4.58		29.950	73.74	61.42	12.32		29.959	61.03	60.78	.25	

JULY.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	73	54	108	53	E	Brisk		A temperature exceeding 80° in the shade was not a rare occurrence in this month. On the 17th, with a cloudless sky, the heat was excessive, being 94° in the shade, and 130° in the sun's rays. This proved the hottest day inthe Season. Next morning the wind was hot and dry from East; but by noon it changed to S. W., and rain began to fall heavily, and more so towards night when it was accompanied with thunder and lightning. Within 24 hours, nearly 2 inches of rain fell at this time, after which the temperature was not so high as in the previous part of the month. On the 29th however, it again reached 82° in the shade, and this was followed by thunder with a still greater fall of rain than happened on the former occasion. The quantity of rain in this month exceeded that of the five preceding, taken together.
2	73	54	99	54	——	Ditto		
3	77	54	113	51	——	Little		
4	80	54	111	53	——	Ditto		
5	81	61	112	61	NE	Ditto	.58	
6	80	59	99	59	S	Ditto	.43	
7	80	59	111	57	——	Ditto	.02	
8	77	53	115	48	NW	Ditto	.02	
9	74	51	85	47	——	Ditto		
10	75	51	103	46	S	Ditto		
11	82	—46	110	—42	——	Ditto		
12	83	56	115	51	SW	Brisk		
13	78	56	108	53	——	Ditto		
14	78	53	105	49	W	Little		
15	81	55	108	51	——	Ditto		
16	86	54	115	50	SW	Ditto		
17	+94	63	+130	60	S	Ditto		
18	67	57	60	57	SW	Ditto	1.22	
19	63	54	71	52	W	Brisk	.60	
20	70	56	93	54	SW	Little	.26	
21	67	57	89	55	S	Brisk	.15	
22	71	51	112	49	N	Little		
23	78	58	111	58	E	Ditto		
24	78	56	112	52	SE	Ditto		
25	79	50	117	48	W	Ditto		
26	78	51	90	47	SW	Ditto	.12	
27	70	48	90	44	——	Ditto	.14	
28	74	61	101	61	S	Ditto	.17	
29	82	63	113	61	E	Ditto	1.31	
30	80	55	105	52	SW	Brisk	.66	
31	74	60	95	58	S	Little	.66	
	76.87	55.16	100.51	52.67			6.3	

Mean Pressure from the 3 daily observations 29.958 inches.
—— Temperature .....Ditto..... 66°.81
—— Dew Point .....Ditto..... 61°.10
—— Degree of Dryness ....Ditto..... 5°.71
—— Degree of Moisture....Ditto..... .834 inch.
—— Force of Vapour.....Ditto..... .580
Least observed degree of Moisture..... .452
Maximum Temperature in Shade..... 94°
Minimum Temperature in ditto..... 46°
Maximum Temperature in the Sun .... 130°
Minimum of Terrestrial Radiation ..... 42°
Mean Temperature of External Air..... 66°.01

WINDS.

North.....1 days.		N. East ....1 days.	
South 8	..	S.East.....1	.
East 6	..	N. West....2	..
West 4	..	S. West 8	

31 days.

Amount of Rain ..... 6.34 inch.

AUGUST.

	Morning.						Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
F.	1	29.858	70	70	—	Foggy	29.851	78	64	14	Fine	29.856	66	66	—	Fine
S.	2	—.886	68	68	—	Cloudy	—.873	74	76	8	Ditto	—.906	60	60	—	Clear
S.	3	—.891	66	56	10	Fine	—.856	75	62	13	Very Fine	—.860	62	62	—	Fine
M.	4	—.912	63	63	—	Foggy	—.910	76	63	13	Ditto	—.910	60	60	—	Ditto
● T.	5	—.860	73	64	9	Cloudy & Fine	—.863	72	63	9	Cloudy & Fine	—.850	65	65	—	Overcast
W.	6	—.858	65	60	5	Fine	—.852	72	72	—	Heavy showers	—.916	60	60	—	Showery
Th.	7	—.951	64	64	—	Cloudy	—.964	66	66	—	Showery	—.882	62	62	—	Heavy Rain
F.	8	—.782	69	69	—	Rain	—.771	73	66	7	Cloudy	—.935	57	57	—	Damp
S.	9	30.074	63	63	—	Ditto	30.109	74	58	16	Sultry	30.150	60	60	—	Clear
S.	10	— 148	63	63	—	Fine	—.098	76	59	17	Very Fine	—.071	60	60	—	Very Fine
☽ M.	11	—.042	66	63	3	Ditto	—.032	80	62	18	Ditto	—.050	60	60	—	Ditto
T.	12	—.172	74	68	6	Ditto	—.079	80	62	18	Ditto	—.013	63	63	—	Ditto
W.	13	29.962	72	65	7	Ditto	29.964	82	68	14	Ditto	—.089	61	61	—	Do. & Cloudy
Th.	14	30 087	62	55	7	Ditto	30.057	72	58	14	Cloudy & Fine	—.092	59	59	—	Very Fine
F.	15	—.085	62	59	3	Cloudy	—.093	73	65	8	Very Fine	—.139	61	61	—	Ditto
S.	16	—.187	68	63	5	Fine	—.165	77	62	15	Ditto	—.163	62	62	—	Ditto
S.	17	—.154	76	62	14	Ditto	—.051	77	62	15	Ditto	—.027	62	62	—	Ditto
M.	18	29.954	65	65	—	Hazy	29.920	78	61	17	Ditto	29.946	64	63	1	Ditto
○ T.	19	—.930	63	63	—	Fine	—.934	75	62	13	Ditto	—.886	62	62	—	Very Fine
W.	20	—.793	64	59	5	Overcast	—.739	74	60	14	Very Fine	—.685	60	60	—	Clearing
Th.	21	—.747	61	57	4	Fine	—.734	73	53	20	Ditto	—.671	59	59	—	Ditto
F.	22	—.769	60	60	—	Ditto	—.764	72	58	14	Cloudy & Do.	—.825	55	55	—	Very Fine
S.	23	— 928	58	52	6	Ditto	—.923	68	60	8	Fine, slight show$_r$	—.894	49	49	—	Clear
S.	24	—.791	55	55	—	Ditto	—.718	70	50	20	Ditto	—.634	51	51	—	HeavyShowers
M.	25	—.725	54	51	3	Clear	—.720	60	60	—	Showery	—.706	51	51	—	Clear & Fine
T	26	—.820	51	51	—	Slight Shower	—.764	69	51	18	Very Fine	—.764	49	49	—	Clearing
☾ W.	27	—.796	54	54	—	Heavy Dew	—.784	65	51	14	Fine	—.843	55	55	—	Overcast & Fine
Th.	28	—.927	50	47	3	Fine but Cool	—.924	65	51	14	Cloudy	—.859	59	59	—	Heavy Rain
F.	29	—.737	62	62	—	Overcast	—.624	64	64	—	Do. with Showers	—.628	61	61	—	Cloudy
S.	30	—.644	66	61	5	Fine	—.672	69	57	12	Fine	—.683	58	58	—	Heavy Rain
S.	31	—.723	64	60	4	Cloudy	—.760	68	60	8	Cloudy & Do.	—.944	55	55	—	Clearing
		29.909	63.58	60.39	3.19		29.892	72.48	60.52	11.96		29.899	58.93	58.90	.03	

AUGUST.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	82	63	110	61	W	Little	.10	With still a high temperature, this month had a fair average of rain; consequently vegetation went on favourably. Between the 8th and 24th was a period of uninterrupted fine weather, excellent for the perfecting of grain and the ripening of fruits. The latter stood much in need of such to correct the super-abundance of watery juice imbibed from the heavy rains of the preceding month. These rains, however, came after many kinds had suffered from excessive heat and dryness, which rendered them incapable of swelling freely; or if they did, it was at a period of their growth too far advanced for even the present fine weather completing the elaboration of their juices, so as to insure their good keeping qualities. On walls some pears were even scorched, especially on west aspects, where the first intimation they had of the sun was all at once from the powerful influence of his meridian rays.
2	76	51	107	48	NE	Ditto		
3	77	55	113	51	N	Ditto		
4	72	58	100	53	S	Ditto		
5	71	58	86	56	SW	Ditto		
6	74	55	100	51	——	Ditto	.58	
7	68	61	71	61*	S	Ditto	.50	
8	74	50	90	46	W	Brisk	.20	
9	72	49	99	45	——	Little		
10	80	50	+120	47	S	Ditto		
11	80	51	110	46	W	Ditto		
12	84	53	111	49	S	Ditto		
13	+85	56	117	52	SW	Ditto		
14	71	53	96	47	NE	Ditto		
15	73	60	99	59	——	Ditto		
16	76	55	103	52	E	Ditto		
17	77	54	103	51	SE	Ditto		
18	77	55	108	52	NE	Ditto		
19	73	58	97	54	——	Ditto		
20	76	54	97	50	W	Ditto		
21	74	49	105	49	SW	Brisk		
22	72	46	100	40	——	Ditto		
23	71	—40	94	—34	——	Little		
24	65	43	83	37	S	Ditto	.23	
25	67	43	87	39	SW	Ditto		
26	70	41	102	36	——	Ditto	.11	
27	71	41	96	35	NW	Ditto		
28	67	54	85	51	SW	Ditto	.02	
29	68	53	77	49	S	Brisk	.01	
30	72	55	82	53	——	Ditto	.92	
31	70	53	90	51	SW	Little	.06	
	73.71	52.16	98.00	48.54			2.73	

Mean Pressure from the 3 daily observations 29.900 inches.
—— Temperature ..... Ditto ..... 65°.0
—— Dew Point ..... Ditto ..... 59°.94
—— Degree of Dryness ... Ditto ..... 5°.06
—— Degree of Moisture ... Ditto ..... .840
—— Force of Vapour ..... Ditto ..... .577 inch.
Least observed degree of Moisture ..... .522
Maximum Temperature in Shade ..... 85°
Minimum Temperature in ditto ..... 40°
Maximum Temperature in the Sun .....120°
Minimum of Terrestrial Radiation ..... 34°
Mean Temperature of External Air ..... 62°.93

WINDS.

North.....	1 days.	N. East.....	5 days.
South.....	7 ..	S. East	1 ..
East.....	1 ..	N. West.....	1 ..
West.....	5 ..	S. West.....	10 ..

31 days.

Amount of Rain.....2.73 inch.

* The bulb of the Thermometer placed in Radiator, being, in consequence of the heavy rain, immersed in water, the temperature exhibited was not lower than that of the other Thermometer.

SEPTEMBER.

		Morning.					Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
M.	1	29.918	62	59	3	Cloudy	29.927	67	67	—	Rain	29.951	57	57	—	Overcast
T.	2	—.999	61	60	1	Ditto	30.029	66	52	14	Fine	30.123	53	53	—	Clear & Fine
● W.	3	30.145	59	59	—	Hazy	—.181	69	58	11	Ditto&Cloudy	—.047	62	62	—	Cloudy [ning
Th.	4	—.072	70	61	9	Very Fine	—.037	75	63	12	Very Fine	29.847	67	65	2	Clear, Light-
F.	5	29.895	65	61	4	Overcast	29.906	72	61	11	Cloudy	—.950	66	66	—	Fine
S.	6	30.031	62	58	4	Fine	30.041	66	57	9	Overcast	30.161	52	52	—	Clear [Dew
S.	7	—.188	55	52	3	Dry Haze	29.590	67	67	—	Heavy Rain	29.944	48	48	—	Do. & Heavy
M.	8	29.674	56	56	—	Heavy Rain	—.600	65	65	—	Ditto	—.534	50	50	—	Clear
T.	9	—.387	56	56	—	Thickly Over-	—.470	70	65	5	Fine	—.663	52	52	—	Ditto
◑ W.	10	—.785	58	53	5	Overcast [cast	—.807	65	65	—	Rain	—.787	59	59	—	Overcast
Th.	11	—.799	59	59	—	Hazy	—.679	69	69	—	Ditto	—.910	56	56	—	Ditto
F.	12	30.088	49	49	—	Heavy Dew	30.172	65	57	8	Fine	30.326	53	53	—	Clear and Fine
S.	13	—.403	54	50	4	Fine	—.452	64	60	4	Very Fine	—.490	48	48	—	Ditto
S.	14	—.527	48	48	—	Fine	—.498	64	56	8	Ditto	—.422	46	46	—	Ditto
M.	15	—.378	47	47	—	Foggy	—.289	65	53	12	Ditto	—.151	50	50	—	Ditto
T.	16	—.038	55	55	—	Ditto	—.010	69	62	7	Ditto	—.015	57	57	—	Ditto
○ W.	17	29.997	64	64	—	Ditto	—.036	75	67	8	Ditto	—.109	61	61	—	Ditto
Th.	18	30.178	60	60	—	Ditto	—.200	73	67	6	Ditto	—.216	59	59	—	Ditto
F.	19	—.237	61	61	—	Ditto	—.171	74	68	6	Ditto	—.267	60	60	—	Foggy
S.	20	—.345	65	65	—	Ditto	—.321	73	59	14	Ditto	—.335	61	61	—	Ditto
S.	21	—.348	60	60	—	Hazy	—.301	69	59	10	Ditto	—.298	60	60	—	Fine
M.	22	—.293	60	57	3	Overcast	—.192	69	57	12	Ditto	—.208	50	50	—	Ditto
T.	23	—.220	52	52	—	Fine	—.201	60	47	13	Ditto	—.200	46	46	—	Ditto
W.	24	—.201	51	51	—	Foggy	—.178	63	50	13	Ditto	—.176	47	47	—	Clear
Th.	25	—.204	51	51	—	Ditto	—.175	65	52	13	Ditto	—.164	53	53	—	Overcast
☾ F.	26	30.087	56	56	—	Slight Rain	—.048	65	56	9	Overcast	29.952	57	57	—	Cloudy
S.	27	29.859	61	61	—	Rain	29.903	68	62	6	Fine	—.979	58	58	—	Ditto
S.	28	30.088	59	59	—	Hazy	30.105	68	57	11	Ditto	30.224	56	56	—	Clear
M.	29	—.273	53	53	—	Foggy	—.231	67	60	7	Very Fine	—.224	50	50	—	Ditto
T.	30	—.178	55	55	—	Ditto	—.140	62	50	12	Ditto	—.133	49	49	—	Ditto
		30.094	57.46	56.26	1.20		30.063	67.63	59.60	8.03		30.095	54.76	54.70	.06	

SEPTEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	67	53	81	49	SE	Little	.14	The rain in this month was limited, not amounting to an inch, and fell on the days of the 1st, between the 7th and 11th, on the 18th and 26th; all the rest were exceedingly fine. The Barometer stood high. The mornings were generally foggy, but soon cleared up to bright, calm sunshine. There were no strong gales, and only 5 days on which the wind acquired briskness.
2	70	50	87	44	W	Ditto		
3	73	57	94	54	S	Brisk		
4	77	58	101	56	——	Little		
5	72	54	101	51	SW	Brisk		
6	69	46	102	42	W	Ditto		
7	70	47	97	41	SW	Little	.06	
8	68	46	73	43	——	Ditto	.30	
9	68	49	85	46	W	Brisk	.03	
10	67	55	80	54	S	Little	.08	
11	67	46	76	43	——	Ditto	.05	
12	66	46	82	43	W	Ditto		
13	68	44	90	40	E	Ditto		
14	68	38	96	35	——	Ditto		
15	74	43	100	41	SE	Ditto		
16	+78	54	+106	50	S	Ditto		
17	78	54	98	52	SW	Brisk		
18	75	51	97	50	——	Little	.03	
19	78	53	99	52	W	Ditto		
20	76	56	101	52	NE	Ditto		
21	78	53	97	49	E	Ditto		
22	76	41	94	38	——	Ditto		
23	68	42	90	35	——	Ditto		
24	68	39	97	34	S	Ditto		
25	72	51	100	49	——	Ditto		
26	66	54	70	54	——	Ditto	.14	
27	68	47	94	43	W	Ditto		
28	70	47	81	40	SW	Ditto		
29	70	40	102	35	SE	Ditto		
30	65	—37	98	—32	E	Ditto		
	70.10	48.33	92.30	44.90			.83	

Mean Pressure from the 3 daily observations 30.084 inches.
—— Temperature ..... Ditto ..... 59°.95
—— Dew Point ..... Ditto ..... 56°.85
—— Degree of Dryness .... Ditto ..... 3°.10
—— Degree of Moisture .. Ditto ..... .825
—— Force of Vapour ..... Ditto ..... .459
Least observed degree of Moisture ..... .616
Maximum Temperature in Shade ..... 78°
Minimum Temperature in ditto ..... 37°
Maximum Temperature in the Sun ..... 106°
Minimum of Terrestrial Radiation ..... 32°
Mean Temperature of External Air ..... 59°.21

WINDS.

North .....0 days	N. East ....1 days.
South..... 8 ..	S. East .....3 ..
East.....6 ..	N. West.. .0 ..
West ..... 6 ..	S. West ....6 ..

30 days.

Amount of Rain.....0.83 inch.

OCTOBER.

		Morning.					Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	30.158	48	48	—	Hazy	30.140	64	50	14	Fine	30.126	45	45	—	Clear and Cool
● Th.	2	—.099	44	44	—	Dense Fog	—.076	65	50	15	Very Fine	—.106	43	43	—	Foggy
F.	3	—.177	41	41	—	Ditto	—.158	58	58	—	Hazy	—.176	44	44	—	Ditto
S.	4	—.222	42	42	—	Ditto	—.173	68	52	16	Very Fine	—.197	42	42	—	Fine
S.	5	—.186	54	54	—	Ditto	—.169	70	65	5	Ditto	—.198	48	48	—	Ditto
M.	6	—.254	43	43	—	Ditto	—.210	71	65	6	Ditto	—.212	51	51	—	Ditto
T.	7	—.217	58	58	—	Very Fine	—.188	69	60	9	Very Fine	—.189	54	54	—	Fine
W.	8	—.168	57	56	1	Cloudy	—.117	65	59	6	Ditto	—.055	57	57	—	Cloudy
☽ Th.	9	29.958	64	63	1	Ditto	29.904	65	61	4	Cloudy & Fine	29.885	55	55	—	Very Fine
F.	10	30.080	54	50	4	Ditto	—.990	58	45	13	Very Fine	30.070	45	45	—	Clear
S.	11	—.113	41	41	—	Ditto	30.087	57	48	9	Fine	—.102	48	48	—	Very Fine
S.	12	—.150	50	50	—	Slight Fog	—.150	60	50	10	Very Fine	—.148	48	48	—	Ditto
M.	13	—.132	51	51	—	Foggy	—.056	65	54	11	Ditto	29.929	44	44	—	Ditto
T.	14	29.773	52	52	—	Overcast	29.714	66	66	—	Slight Shower	—.698	52	52	—	Overcast
W.	15	—.805	50	50	—	Fine	—.726	58	45	13	Fine	—.724	41	41	—	Ditto
Th.	16	—.726	48	48	—	Overcast	—.434	59	59	—	Rain	29.322	54	54	—	Clear & Windy
⊙ F.	17	—.313	52	45	7	Clear & Windy	—.378	57	42	15	Fine	—.593	50	48	2	Very Fine
S.	18	—.627	47	40	7	Ditto	—.695	50	39	11	Clear & Windy	—.850	52	50	2	Windy
S.	19	30.046	40	40	—	Slight Fog	—.896	56	56	—	Drizzly	—.914	52	52	—	Rain
M.	20	29.773	56	56	—	Fine	—.447	59	59	—	Rain	—.854	50	50	—	Overcast
T.	21	—.982	53	50	3	Ditto	30.151	51	48	3	Cloudy & Cold	30.271	39	39	—	Clear & Cold
W.	22	—.961	48	48	—	Overcast	29.880	56	50	6	Cloudy	29.797	53	53	—	Windy, slight rain
Th.	23	—.628	52	52	—	Rain	—.582	55	55	—	Stormy, Rain	—.731	40	29	11	Very Clear
F.	24	—.796	35	25	10	Clear, Cold & Dry	—.834	42	29	13	Cold and Dry	—.948	40	33	7	Ditto & Cold
☾ S.	25	30.123	42	39	3	Ditto	30.157	48	40	8	Ditto	30.239	39	34	5	Ditto
S.	26	—.395	42	39	3	Ditto	—.424	49	40	9	Fine, but Cold	—.496	39	39	—	Ditto
M.	27	—.436	45	42	3	Hazy	—.446	55	50	5	Cloudy	—.461	58	50	8	Fine
T.	28	—.500	51	51	—	Foggy	—.534	54	48	6	Ditto	—.574	50	50	—	Overcast
W.	29	—.674	49	49	—	Ditto	—.659	50	45	5	Dry Haze	—.615	46	46	—	Ditto
Th.	30	—.513	46	46	—	Hazy	—.415	53	48	5	Fine	—.320	44	44	—	Foggy
F.	31	—.244	46	46	—	Fine	—.191	58	53	5	Ditto	—.160	52	52	—	Cloudy
		30.073	45.19	43.84	1.35		30.031	58.41	51.26	7.16		30.063	47.58	46.45	1.13	

OCTOBER.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	66	38	103	33	E	Little		In contrasting this month with the same period in the preceding year, very different characters are found to belong to each. In the former season, stormy winds raged with destructive violence among the ripening fruits, accompanied with heavy rains, which fell so constantly that but few dry intervals were afforded for collecting those which the blasts had allowed to remain. But throughout the present month, with very few exceptions, day after day seemed like those unseasonably-agreeable ones which at this season so often betoken a change. The quantity of rain was extremely small; none fell till the 14th, nor after the 23d. The Temperature was more than 3° above the average. On the 5th it was 80° in the shade.
2	71	36	98	32	S	Ditto		
3	70	37	93	38	——	Ditto		
4	78	36	108	32	——	Ditto		
5	+80	49	106	46	——	Ditto		
6	79	52	+107	48	——	Ditto		
7	74	50	96	45	W	Little		
8	63	56	92	55	S	Brisk		
9	66	50	96	45	SW	Little		
10	60	—32	70	—25	E	Ditto		
11	65	41	83	37	——	Ditto		
12	67	40	87	35	S	Ditto		
13	70	41	96	37	——	Ditto		
14	71	46	96	42	SW	Brisk	.12	
15	40	36	75	31	S	Little		
16	60	50	72	45	SW	Brisk	.04	
17	58	42	73	38	W	Strong	.17	
18	60	50	72	45	NW	Ditto		
19	62	53	69	50	SW	Brisk	.02	
20	61	49	72	45	S	Ditto	.04	
21	55	36	56	30	NE	Ditto		
22	56	51	56	47	W	Strong	.01	
23	56	33	57	27	——	Ditto	.03	
24	49	38	65	33	NW	Brisk		
25	50	35	69	30	——	Ditto		
26	45	54	57	40	N	Ditto		
27	54	45	57	40	——	Little		
28	53	44	56	40	NE	Ditto		
29	54	44	66	42	S	Ditto		
30	55	40	60	55	SW	Ditto		
31	59	48	70	45	W	Brisk		
	61.51	43.61	75.25	39.77			0.43	

Mean Pressure from the 3 daily observations 30.055 inches.
—— Temperature.....Ditto..... 50°.39
—— Dew Point.....Ditto..... 47°.18
—— Degree of Dryness....Ditto..... 3°.21
—— Degree of Moisture....Ditto..... .903
—— Force of Vapour.....Ditto..... .364 inch.
Least observed degree of Moisture..... .612
Maximum Temperature in the Shade.... 80°
Minimum Temperature in ditto..... 32°
Maximum Temperature in the Sun.....107°
Minimum of Terrestrial Radiation..... 25°
Mean Temperature of External Air..... 52°.56

WINDS.

North	2 days.	N. East.....	2 days.
South 11	..	S. East.....	0 ..
East.....	3 ..	N. West	3 ..
West.....	5 ..	S. West.....	5 ..

31 days.

Amount of Rain ..... 0.43 inch.

NOVEMBER.

	Morning.						Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	30.120	50	50	—	Slightly overcast	30.126	57	52	5	Fine	30.124	52	52	—	Fine
S.	2	—.142	51	51	—	Slight Rain	—.092	55	45	10	Cloudy	—.081	51	51	—	Ditto
M.	3	—.070	50	45	5	Fine	—.040	58	53	5	Very Fine	—.067	43	43	—	Very Fine
T.	4	—.148	43	43	—	Foggy	—.083	58	53	5	Ditto	29.926	55	55	—	Cloudy
W.	5	29.729	59	59	—	Rain	29.644	61	61	—	Stormy & Wet	—.558	58	58	—	Windy wth rain
Th.	6	—.746	58	58	—	Overcast	—.677	62	58	4	Overcast	—.666	54	54	—	Rain
F.	7	—.507	50	50	—	Ditto	—.437	60	58	2	Cloudy	—.447	55	55	—	Ditto
D S.	8	—.452	47	45	2	Clear	—.453	52	43	9	Fine	—.451	44	44	—	Overcast
S.	9	—.478	51	51	—	Rain	—.501	55	55	—	Rain	—.556	43	43	—	Rain
M.	10	—.854	46	46	—	Ditto	—.928	46	46	—	Ditto	30.109	43	43	—	Clearing
T.	11	30.191	41	41	—	Fine	30.204	49	49	—	Cloudy	—.291	41	41	—	Drizzly
W.	12	—.333	41	34	7	Cold and dry	—.299	42	35	7	Ditto and Cold	—.310	40	38	2	Fine but Cold
Th.	13	—.310	38	33	5	Ditto	—.302	43	36	7	Ditto	—.370	36	34	2	Cloudy& Fine
F.	14	—.337	39	36	3	Ditto	—.424	46	42	4	Ditto	—.412	38	38	—	Clear
S.	15	—.452	40	40	—	Overcast	—.432	49	43	6	Overcast & Fine	—.420	40	40	—	Fine
O S.	16	—.399	40	40	—	Ditto	—.369	48	44	4	Overcast	—.315	38	38	—	Very Fine
M.	17	—.213	43	43	—	Ditto	—.149	51	47	4	Cloudy	—.086	45	45	—	Ditto
T.	18	—.161	43	43	—	Fine	—.170	48	41	7	Fine	—.243	46	42	4	Fine
W.	19	—.293	33	33	—	Frosty	—.270	42	39	3	Fine but Cold	—.201	35	35	—	Ditto
Th.	20	—.060	34	32	2	Ditto	29.944	40	34	6	Ditto	29.840	36	34	2	Cloudy
F.	21	29.792	36	32	4	Overcast	—.785	41	36	5	Overcast	—.792	39	39	—	Hazy
S.	22	—.754	42	42	—	Foggy	—.739	47	47	—	Drizzly	—.880	45	45	—	Overcast
S.	23	30.052	43	40	3	Cloudy	30.088	45	40	5	Cloudy & Cold	30.151	38	38	—	Clear
☾ M.	24	—.150	39	39	—	Fine	—.113	48	45	3	Ditto & Fine	—.051	42	42	—	Overcast
T.	25	29.947	40	36	4	Cloudy & Cold	29.897	41	36	5	Dry Haze	29.878	40	35	5	Ditto & Cold
W.	26	—.882	37	34	3	Hazy	—.884	39	33	6	Overcast & Cold	—.943	30	30	—	Overcast
Th.	27	—.993	28	28	—	Clear & frosty	—.973	46	46	—	Fine	—.889	40	40	—	Fine
F.	28	—.791	45	45	—	Fine	—.689	47	45	2	Cloudy	—.338	43	43	—	Clear
S.	29	—.316	41	38	3	Clear	—.285	50	50	—	Ditto	—.102	44	44	—	Ditto
● S.	30	—.592	45	43	2	Cloudy	—.721	45	41	4	Very Fine	—.736	38	38	—	Overcast
		29.975	43.10	41.66	1.43		29.957	49.03	45.10	3.93		29.941	43.06	42.56	.50	

NOVEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	58	46	75	41	W	Little		
2	61	45	79	40	SW	Ditto		
3	63	38	+80	32	——	Ditto		
4	60	55	78	53	——	Ditto	.02	
5	61	56	62	53	——	Strong	.18	
6	+63	53	64	53	——	Little	.52	
7	62	46	69	42	S	Brisk	.03	
8	59	42	69	39	SW	Little	.31	
9	55	46	62	44	S	Brisk	.24	
10	57	35	52	31	NE	Ditto	.01	
11	50	40	57	37	——	Ditto		
12	54	37	71	33	E	Ditto		
13	55	33	62	26	NE	Little		
14	47	33	60	25	——	Brisk		
15	48	35	60	30	——	Little		
16	48	36	52	32	N	Ditto		
17	51	40	60	35	NW	Ditto		
18	44	30	52	24	NE	Ditto		
19	43	30	53	24	E	Ditto		
20	40	30	49	25	NE	Brisk		
21	45	34	45	32	E	Little	.06	
22	47	42	48	40	——	Brisk		
23	44	33	47	26	NE	Ditto		
24	48	38	63	35	E	Little		
25	40	36	41	34	——	Ditto		
26	40	—25	44	—20	NE	Ditto		
27	51	35	65	31	SW	Ditto		
28	51	39	66	33	——	Brisk	.12	
29	50	42	50	36	——	Ditto		
30	54	31	54	32	W	Little	.26	
	51.63	38.70	59.63	34.60			1.75	

This month was still very favourable for the operations of the garden at this season of the year. Whilst the wind was South or South-west in the beginning of the month, there was a considerable quantity of rain for the time; but from the 11th till the 28th, the wind being chiefly East or North-east, scarcely any rain fell. Frosts were experienced about the 18th sufficiently severe to spoil finally the beauty of the Dahlias.

Mean Pressure from the 3 daily observations 29.957 inches.
—— Temperature.....Ditto..... 45°.06
—— Dew Point.....Ditto..... 43°.11
—— Degree of Dryness.....Ditto..... 1°.95
—— Degree of Moisture.....Ditto..... .932
—— Force of Vapour.....Ditto..... .317 inch.
Least observed degree of Moisture..... .714
Maximum Temperature in Shade ..... 63°
Minimum Temperature in ditto..... 25°
Maximum Temperature in the Sun..... 80°
Minimum of Terrestrial Radiation..... 20°
Mean Temperature of External Air..... 45°.16

WINDS.

North.....	1 days	N. East.....	9 days
South	2 ..	S. East.....	0 ..
East	6 ..	N. West.....	1 ..
West	2 .	S. West.....	9 ..

30 days.

Amount of Rain.....1.75 inch.

DECEMBER.

		Morning.					Noon.					Night.				
1834.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
M.	1	29.268	52	52	—	Stormy & Wet	29.396	50	42	8	Fine	29.478	43	43	—	Clearing
T.	2	—.605	42	42	—	Clear	—.703	52	43	9	Cloudy & Do.	30.028	41	41	—	Fine
W.	3	30.110	42	42	—	Fine	30.156	49	47	2	Overcast	—.195	47	47	—	Ditto
Th.	4	—.187	47	47	—	Ditto	—.172	52	50	2	Do. and Fine	—.171	33	32	1	Frosty
F.	5	—.220	37	37	—	Foggy	—.194	47	46	1	Ditto	—.199	32	32	—	Foggy
S.	6	—.223	38	38	—	Ditto	—.219	49	49	—	Hazy	—.240	48	48	—	Hazy
S.	7	—.192	50	50	—	Rain	—.127	50	50	—	Rain	—.081	51	51	—	Stormy & Wet
☽ M.	8	—.268	42	38	4	Clear	—.335	45	35	10	Very Clear	—.499	42	42	—	Clear
T.	9	—.569	34	34	—	Ditto	—.549	44	40	4	Fine	—.411	37	37	—	Overcast
W.	10	—.307	42	42	—	Clearing	—.347	45	38	7	Clear	—.512	37	37	—	Very Clear
Th.	11	—.613	29	29	—	Sharp Frost.	—.646	41	41	—	Fine	—.637	30	30	—	Frosty
F.	12	—.551	31	31	—	Frosty	—.491	38	38	—	Ditto [Haze	—.468	42	42	—	Hazy
S.	13	—.502	42	42	—	Slight Haze	—.503	44	40	4	Ditto slight	—.523	32	32	—	Clear & Frosty
S.	14	—.568	37	37	—	Overcast	—.564	39	38	1	Overcast	—.611	35	34	1	Very Clear
M.	15	—.667	38	38	—	Hazy	—.622	41	41	—	Hazy	—.641	42	42	—	Overcast
○ T.	16	—.648	44	44	—	Ditto	—.599	47	47	—	Ditto	—.567	42	42	—	Fine
W.	17	—.170	43	40	3	Clear & Windy	—.165	45	40	5	Blustering	—.220	42	42	—	Very Clear
Th.	18	—.333	40	40	—	Clear	—.356	45	38	7	Fine	—.445	32	32	—	Ditto
F.	19	—.463	40	40	—	Cloudy	—.450	44	44	—	Cloudy	—.446	42	42	—	Cloudy & Fine
S.	20	—.425	41	41	—	Overcast	—.401	44	44	—	Ditto	—.414	42	42	—	Overcast
S.	21	—.426	42	40	2	Cloudy	—.411	44	39	5	Fine	—.437	43	43	—	Ditto
M.	22	—.547	37	35	2	Ditto	—.568	42	32	10	Very Fine	—.558	30	30	—	Clear & Frosty
☾ T.	23	—.558	29	29	—	Sharp Frost	—.534	40	40	—	Ditto	—.557	27	27	—	Ditto
W.	24	—.550	31	31	—	Frosty & foggy	—.500	34	34	—	Ditto	—.441	33	33	—	Clearing
Th.	25	—.407	38	38	—	Slight Haze	—.411	45	42	3	Ditto	—.496	40	40	—	Hazy
F.	26	—.563	38	38	—	Fine	—.483	43	43	—	Cloudy & Cold	—.591	39	39	—	Ditto
S.	27	—.610	36	36	—	Dense Fog	—.602	39	39	—	Foggy	—.576	36	36	—	Foggy
S.	28	—.492	36	35	1	Fine	—.459	41	38	3	Very Fine	—.372	31	31	—	Clear & Frosty
M.	29	—.243	35	35	—	Hoar Frost	—.171	44	44	—	Fine	—.121	32	32	—	Rain
● T.	30	—.005	50	50	—	Thickly overcast	—.001	52	52	—	Rain	29.913	51	51	—	Overcast
W.	31	29.859	54	54	—	Ditto	29.823	54	54	—	Heavy Rain	—.860	54	54	—	Rain
		30.326	39.90	39.52	.38		30.321	44.80	44.19	.61		30.346	39.00	38.94	.06	

DECEMBER.

Days.	Temperature. Max.	Min.	Sun.	Rad.	Wind. Direction.	Force.	Rain. In.	Pts.
1	+56	43	57	38	W	Brisk	.02	
2	52	33	56	26	——	Ditto		
3	49	45	50	42	——	Little		
4	51	30	58	25	SE	Ditto		
5	50	28	56	22	SW	Ditto		
6	55	47	55	43	——	Ditto	.01	
7	55	43	55	37	——	Strong	.14	
8	46	33	53	27	W	Brisk		
9	46	33	52	29	SW	Little	.19	
10	46	28	53	21	W	Brisk		
11	45	28	54	24	SW	Little		
12	46	33	53	31	W	Ditto		
13	45	32	46	28	NE	Ditto		
14	41	35	41	30	——	Ditto		
15	44	40	46	39	——	Ditto		
16	46	38	50	33	——	Ditto		
17	46	39	57	35	N	Strong	.04	
18	45	31	57	26	NE	Ditto		
19	44	40	44	36	——	Ditto		
20	44	38	46	37	——	Ditto		
21	46	36	50	29	SW	Ditto		
22	43	27	60	18	N	Ditto		
23	41	—25	57	—16	——	Ditto		
24	39	30	42	25	SW	Ditto		
25	46	35	47	31	NW	Ditto		
26	43	31	45	29	NE	Ditto		
27	42	30	52	27	SE	Ditto		
28	42	27	48	21	——	Ditto		
29	46	39	51	35	S	Ditto	.03	
30	55	50	+63	49	SW	Ditto	.07	
31	53	43	56	42	——	Ditto	.24	
	46.38	35.16	51.93	30.67			0.74	

Remarks.

The weather continued dry and favourable for the most part of the month. The Barometer, from the 3rd to the 29th, stood remarkably high. The quantity of rain was extremely limited, scarcely amounting to three-fourths of an inch; being almost as much below the usual average as the latter was exceeded in the corresponding period of the former season, in which there fell about $4\frac{3}{10}$ inches.

Mean Pressure from the 3 daily observations 30,331 inches.
—— Temperature .....Ditto..... 41°.23
—— Dew Point .....Ditto..... 40°.87
—— Degree of Dryness .....Ditto..... 0°.35
—— Degree of Moisture .....Ditto..... .982 inch.
—— Force of Vapour.....Ditto..... .289
Least observed degree of Moisture ..... .705
Maximum Temperature in the Shade..... 56°
Minimum Temperature in ditto..... 25°
Maximum Temperature in the Sun..... 63°
Minimum of Terrestrial Radiation..... 16°
Mean Temperature of External Air..... 40°.77

WINDS.

North	3 days	N. East	8 days
South	1 ..	S. East	3 .
East	0 ..	N. West	1 ..
West	6 ..	S. West	9 ..

31 days.

Amount of Rain .....0.74 inch.

Monthly Mean Pressure, Temperature, and Dew Point, &c. of 1834; deduced from the Observations recorded in the preceding Journal.

1834.	Pressure.								Temperature.												
					Mean at				In the Shade.			Mean at				In Sun's Rays.		Terrestrial Radiation		
Months.	Max.	Min.	Med.	Range of Barom.	Morn.	Noon.	Night.	Mean of the three Observations.	Max.	Min.	Med.	Morn.	Noon.	Night	Mean of the three Observs	Max.	Min.	Max.	Min.	Med. of Sun and Radn.
Jan. .	30.449	29.071	29.755	1.378	29.751	29.753	29.763	29.755	58	28	45.4	44.8	48.3	44.9	46.0	62	47	47	18	44.7
Feb. .	30.517	29.663	30.175	0.854	30.180	30.167	30.184	30.177	59	24	41.5	38.6	46.0	39.6	41.4	72	42	45	16	42.8
March	30.596	29.559	30.236	1.037	30.249	30.228	30.258	30.245	60	24	45.0	42.8	51.5	42.4	45.6	81	55	46	15	49.3
April	30.515	29.305	30.178	1.210	30.192	30.166	30.176	30.178	69	26	46.8	46.3	54.9	42.9	48.0	90	53	50	18	51.6
May .	30.501	29.435	30.046	1.066	30.046	30.040	30.052	30.046	80	35	57.3	58.1	66.4	51.5	58.7	114	79	56	26	67.0
June.	30.399	29.654	29.992	0.745	29.979	30.003	29.992	29.991	91	39	62.1	63.7	71.3	56.7	63.9	121	81	58	33	73.0
July .	30.295	29.461	29.957	0.834	29.965	29.950	29.959	29.958	94	46	66.0	65.6	73.7	61.0	66.8	130	60	61	42	76.5
Aug.	30.187	29.624	29.904	0.563	29.909	29.892	29.899	29.900	85	40	62.9	63.5	72.4	58.9	65.0	120	71	61	34	73.2
Sept.	30.527	29.387	30.086	1.140	30.094	30.063	30.095	30.084	78	37	59.2	57.4	67.6	54.7	59.9	106	70	56	32	68.6
Oct. .	30.674	29.313	30.049	1.361	30.073	30.031	30.063	30.055	80	32	52.5	45.1	58.4	47.5	50.3	107	56	55	25	57.5
Nov. .	30.452	29.102	29.957	1.350	29.975	29.957	29.941	29.957	63	25	45.1	41.6	49.0	43.0	45.0	80	53	41	20	47.1
Dec. .	30.667	29.268	30.332	1.399	30.326	30.321	30.346	30.331	56	25	40.7	39.9	44.8	39.0	41.2	63	41	49	16	41.3
Aer.	30.476	29.403	30.055	1.077	30.059	30.047	30.060	30.055	72.7	35.0	52.0	50.6	58.7	48.5	52.6	95.5	59.0	52.0	24.5	57.7

1834.	Hygrometer indicating Dew Point.								Scale of the Winds.									Rain.	
	Mean Dew Point at			Mean Dew Point.	Mean Force of Vapour.	Mean degree of Dryness.	Mean degree of Moisture.	Least degree of Moisture.											
Months.	Morn.	Noon.	Night.						N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Days.	In.	Pts.
Jan. .	43.9	45.6	44.8	44.8	0.328	1.23	973	682	1	0	1	0	9	11	6	3	31	2	87
Feb. .	37.8	42.8	39.2	40.0	0.280	1.40	942	617	1	2	1	3	7	5	7	2	28	0	37
March	39.9	41.0	41.3	40.7	0.224	4.81	835	397	1	4	5	1	3	8	6	3	31	0	86
April	41.9	39.7	41.3	41.0	0.292	7.04	813	347	5	10	2	8	1	3	0	1	30	0	65
May .	53.8	51.1	50.4	51.8	0.425	6.90	791	412	0	5	7	0	11	7	1	0	31	1	19
June.	54.0	53.7	56.2	54.6	0.457	9.26	740	320	2	1	2	2	9	5	8	1	30	1	63
July .	61.1	61.4	60.7	61.1	0.580	5.71	834	452	1	1	6	1	8	8	4	2	31	6	34
Aug.	60.4	60.5	58.9	59.9	0.577	5.06	840	522	1	5	1	1	7	10	5	1	31	2	73
Sept.	56.2	59.6	54.7	56.8	0.459	3.10	825	616	0	1	6	3	8	6	6	0	30	0	83
Oct.	43.8	51.2	46.4	47.1	0.364	3.21	903	612	2	2	3	0	11	5	5	3	31	0	43
Nov.	41.6	45.1	42.5	43.1	0.317	1.95	932	714	1	9	6	0	2	9	2	1	30	1	75
Dec. .	39.5	44.2	38.9	40.8	0.289	0.35	982	705	3	8	0	3	1	9	6	1	31	0	74
Aver.	47.8	49.6	47.9	48.4	0.382	4.16	867	533	18	48	40	22	77	86	56	18	365	20	39

II. *Upon the Causes of the Diseases and Deformities of the Leaves of the Peach-Tree. By* Thomas Andrew Knight, *Esq. F.R.S. Pres.*

Read July 15, 1834.

I communicate the following facts without venturing to draw any conclusions, being wholly unable to trace any connection between the apparent cause and the apparent effect; and I should have waited till I had obtained the evidence of more experiments, but that the evidence of such experiments, confined to a single situation or soil, would have still remained defective.

Every gardener knows that the leaves of Peach-Trees frequently become diseased and deformed, owing to the operation of two perfectly distinct causes; one being obviously the depredations of insects, and the other being generally, I believe universally, supposed to be frost. In the last mentioned case, the leaves, if suffered to remain upon the trees, continue to grow, and in part to perform their office of generating the living sap of the tree; but the whole, or nearly the whole, of the fluid thus created is expended in their own deformed and morbid growth. In unfavourable situations, such as mine unfortunately is, a large portion of the first formed leaves is frequently rendered useless, or worse than useless; and I do not recollect a single season in which a very large part, and sometimes all the early foliage of my Peach and Nectarine trees, which almost wholly occupy the entire south wall of my garden here, (Downton Castle) has not been destroyed or rendered useless, previously to the present season.

In the autumn of the year 1831 a small Nectarine tree, which grew in a pot in my Peach house, was removed from it, and planted

in the open air, amongst other trees of the same species. A few of the species of scale insect, which is the usual pest of the Peach house, were then transferred to the Peach trees upon my open wall, on which they encreased considerably during the succeeding summer and autumn, and extended themselves over nearly a whole tree on one side, and on nearly half a tree on the other side. In the following winter my gardener applied to the trees to which these insects had extended themselves, a mixture of lime and flowers of sulphur, dressing the whole of one tree, and about one half of the other. In the following spring, whether owing to the application above-mentioned, or, as is, I think more probable, the effects of winter, the insects wholly disappeared: and the following very singular circumstances occurred. The leaves of all the Peach trees growing in the situation above-mentioned were almost wholly destroyed in the spring of 1833, exclusive of those of the trees to which the mixture of lime and flowers of sulphur had been applied; whilst all the foliage of one tree, and that of one half of the other presented a perfectly healthy character, as far, precisely, as the dressing above described had extended. In the spring of the present year, when the blossom buds of my Peach trees had acquired about the size of hemp seeds, water holding in solution or suspension, a mixture of lime and flowers of sulphur and soot, was thrown upon all the Peach trees abovementioned, with an engine, in sufficient quantities to wet the whole of the trees and wall, but not materially to affect the colour of the wall. No injurious effects followed, and not a single blistered leaf has appeared upon my trees, which are bearing an abundant crop of fruit, and present an appearance of health, which I have certainly never once before witnessed within the last thirty years.

The red spider had greatly abounded upon my Peach trees in the preceeding year, and had given my Gardener a good deal of trouble; but in the present season very few appeared and none

apparently remain. The dislike of this very troublesome insect to sulphur is well known, and I do not entertain any doubt that, relatively to those, the application of it operated very beneficially; but I am wholly unable to conjecture by what mode of operation it could have acted beneficially in preserving the foliage of my trees; and whether it did or did not cause their preservation, can only be determined by future experiment.

III. *Particulars respecting the mode of Cultivation &c. of the Averrhoa Carambola. By* James Bateman, *Esq. F.H.S.*

Read December 3, 1833.

The fruit of Averrhoa Carambola never having been as, far as I can collect, produced in Europe before, it has occurred to me that a few particulars respecting the mode of its cultivation, as well as a short account of the tree in its wild state, may at the present moment, prove not entirely destitute of interest.

Averrhoa Carambola is found in abundance in the East Indian Archipelago, Bengal, Ceylon, &c. where its fruit passes under the various denominations of "Blimbing" "Tamaratonga" and "Camnie" or "Camrunga" but the former name, being not only the most general, but also the most pronounceable, it would perhaps be well to adopt it, should the fruit be found to possess sufficient attractions to entitle it to a place in our desserts.

The Blimbing seems to vary much in size, being found by some travellers, as large as a hen's egg, while others represent it as attaining the bulk of a large orange; its merits too are as variously reported as its dimensions, for while in Hindostan it is declared to be wholesome and delicious, in Java (as we are informed by Abel) it is in great request for tarts, and nothing more.

The tree by which it is produced is of moderate stature, with an elegant spreading head and light airy foliage something similar to that of the Acacia; it is very prolific and produces fruit three times a year, from the age of three to fifty.

In cultivation it requires to be *plunged*, but not in any heating substance; my plant, which I received only last year from Messrs.

Averrhoa Carambola.

Miss Drake del.

W. Clark

Lee of the Hammersmith Nursery has attained the height of about five feet, with a naked stem for four fifths of the distance; this as well as all the older branches became covered in July with countless clusters of elegant though minute rosy flowers, a succession of which continued for upwards of three months and I doubt not, that had the plant been allowed more pot room, instead of setting only six fruit it would have borne as many dozens. The fruit, from the time of their setting, steadily advanced in size, never having had (like peaches and most other fruits) any period, during which they were stationary.

Nothing could be more beautiful or singular than their appearance as they approached maturity; their colour was intensely golden, and they diffused too a rich aromatic perfume; but the most remarkable feature in the fruit is the five excessively prominent angles, which present, as far as I am aware, an unique form among edible fruits. Upon trial it was found that this fruit possessed qualities of the first order when made into a preserve.

IV. *On the Cultivation of Chlidanthus fragrans, a hardy bulbous plant. In a Letter to the Secretary. By* R. W. Byres, *Esq.*

Read July 16, 1833.

Sir, Bryn Sifi, Swansea, 21 June, 1833.

According to your request, I beg to communicate the result of seven years experiments on Chlidanthus Fragrans.

This elegant and fragrant flower I am happy to say is of as easy culture as the narcissus and must become a great favorite in every select flower-garden. Amongst a collection of 150 varieties of the Amaryllideæ which I possessed (several of which I have lost this winter) Chlidanthus Fragrans took its place, and from Mr. Herbert's account of it, I was particularly anxious to see the flower, and for three years it had careful stove and frame attention; but I observed that a high temperature had the effect of fretting the bulb into offsets, and not of enlarging it. I, therefore, placed it one year in the green-house, and here as before, very long leaves and offsets appeared, and in despair of doing anything with the bulb, and finding my stock increasing, I determined in 1830 to plant some out of doors, and having prepared a bed by a south wall 18 inches deep of my common amaryllis soil (turfy loam, sand, and decayed vegetable matter) I planted several bulbs in it six inches deep; through that year little was effected, but I was satisfied the bulbs were healthy. I, therefore, allowed them to remain through the winter, protecting them by mulching. In the April of the next year they began to show themselves, I was satisfied they were getting stronger as *very* few offsets appeared and the leaves were more sturdy;

hoping for a flower in 1832 I again left them undisturbed, but not a bulb threw up a scape, and after they had made most vigorous foliage, and gradually died off, I took up the plants in November when some very fine bulbs were obtained, nearly as large as Sprekelia formosissima, or four times larger than the original bulb obtained from the nursery.

I potted seven bulbs, four of which flowered in the green-house in April. The remainder of the bulbs I planted out as before, and one of them in the end of May threw up its scape, and flowered, and hoping to see its seed I fertilized it with its pollen, but after about a fortnight, I saw the flower perish without any enlargement of the germ.

The Hon. and Rev. Wm. Herbert states the stigma to be obtuse, this I conclude must be an error as in all my flowers it is trifid.

I have the honour to be,

Sir,

Your most obedient

humble servant,

Robert W. Byres.

V. *Upon the causes of the premature death of parts of the Branches of the Moor-park Apricot, and some other wall Fruit-Trees.* *By* THOMAS ANDREW KNIGHT, *Esq. Pres. F.R.S.*

Read June 2, 1835.

THE branches of all trees, during much the larger portion of the periods in which they continue to live, are in their natural situations kept in continual motion, by the action of wind upon them; and of this motion their stems and superficial roots partake, whenever the gales of wind are even moderately strong: and I have shewn, in the Philosophical Transactions, that the forms of all large and old trees must have been much modified by this agent. The motions of the circulating fluids, and sap of the tree, are also greatly influenced and governed by it; and whenever any part of the root, the stem, or the branches of a tree are bent by winds, or other agents, an additional quantity of alburnum is there deposited; and the form of the tree becomes necessarily well adapted to its situation, whether that be exposed, or sheltered. If exposed to frequent and strong agitation, its stem and branches will be short and rigid, and its superficial roots will be large and strong; and if sheltered its growth will be in every part more feeble and slender. I have much reason to believe, upon the evidence of subsequent experiments, that the widely extended branches of large timber trees would be wholly incapable of supporting their foliage when wetted with rain, if the proportions of their parts were not to be extensively changed and their strength greatly augmented, by the operation of winds upon them during their previous growth. Exercise, therefore, appears to be productive of somewhat analogous effects upon vegetable, and

upon animal life; and to be nearly as essential to the growth of large trees, as to that of animals.

Whenever the branches of a tree are bound to a wall, they wholly lose the kind of exercise above described, which nature obviously intended them to receive; and many ill consequences generally follow; not however, to the same extent, nor precisely of the same kind, to trees of different species and habits. When a standard Plum or Peach tree is permitted to take its natural form of growth, its sap flows freely, and most abundantly, to the extremities of its branches, and it continues to flow freely through the same branches during the whole life of the tree: but when the branches are bound to a wall, and are no longer agitated by winds, each branch becomes in a few years what DUHAMEL calls "usée," that is debilitated and sapless, owing apparently to its being no longer properly pervious to the ascending sap. The obstruction to the ascent of this causes luxuriant shoots to spring from the lower parts of the tree; and these are in succession made to occupy the places of the debilitated older branches by the process which the gardener calls "cutting in."

The branches of the Apricot, and particularly of the Moor-park varieties often die suddenly, owing to the same cause, with much more inconvenience and loss very frequently to the Gardener; for trees of this species do not usually afford him the means of filling up vacancies upon his wall, as those of the Peach and Plum do.

The Pear tree better retains its health and vigour, when trained to a wall, than those of either of the preceding species, or than the Cherry tree; bnt the proper course of its sap is nevertheless greatly deranged; and it is difficult, and in some varieties almost impossible, to cause it to flow properly to the extremities or nearly to the extremities of its branches. Much the larger part of it is generally expended in the production of what are called "foreright" useless shoots; and the quantity of fruit, which is afforded by the

central parts of an old Pear tree, when trained to a wall, is usually very small.

The Vine alone amongst fruit trees appears capable of being bound and trained to a great distance upon a wall without sustaining any injury, its sap continuing to flow freely and abundantly to its very distant branches. Owing to a peculiarity of structure, and habit, which is confined to those species of trees, from which nature has withheld the power of supporting their own branches, the alburnum of all plants of this habit is (as far as I have had opportunities of observing) excessively light or porous; and not being intended by nature to support its own weight, or that of any part of the foliage of the tree, does not acquire with age any increased solidity, like that of trees of a different habit, and on this account probably it never, how long-soever deprived of exercise, loses in any degree its power of transmitting the ascending sap. The alburnum of those trees, which nature has caused to support themselves, without external aid, becomes annually more firm and solid, and consequently less well adapted to afford a passage to the ascending sap, and as heart wood it is totally impervious to that fluid. Whenever the branches of such trees are wholly deprived of exercise too rapid an increase of the solidity of the alburnum probably takes place; and it in consequence ceases to be capable of properly executing its office. I have, of course, never had an opportunity of examining the character of the alburnum of the Glycine sinensis, of which the garden of this society contains so splendid a tree; but I do not entertain a shadow of a doubt of its being extremely light and porous, like that of other trailing and creeping plants, which depend for support upon other bodies.

VI. *On Forcing Peaches and Nectarines. By Mr.* John Mearns. *F. H. S.*

Read March 3, 1835.

Sir, Welbeck Gardens, Ollerton, 9th Feb. 1835.

Having been twice honoured with your Medal for Exhibitions of Peaches and Nectarines sent to the Society; and as those were the only that I ever sent, I have reason to believe it to arise from my method of cultivation, which differs from the general practice. I have never seen or heard of its being practised by any one else.

I do not approve of the Dutch method of resting the trees every alternate year, the practice is a bad one, as the tree once forced, when due attention has been paid to the roots, is in the best state for early excitement again; a tree taken direct from a wall not so, as it is excited two or three months before its natural season. If a judicious attention be paid to the roots, the same tree is far more successfully forced for a great many years. A late gardener to Lord Stafford, on seeing my practice, informed me some years ago of an amateur clergyman near Norwich, who had successfully forced the same trees for more than thirty years. His practice was to take them up every season as soon as they had done growing, and to plant them against a northern aspect till the end of *November;* and in the mean time to clear all the soil from his border, and fill it again with well prepared compost. His usual time to commence forcing was the beginning of January.

I had a small house erected for the experiment at Shobdon Court many years ago to try the practice, and followed it up for two years with success; but the removal of the trees is unnecessary, as, with a due attention to the roots, the following method answers

better, and is attended with much less trouble and expense than the above.

There are few gardens that have so much north walling to spare, and a better end is obtained without the sacrifice.

I confine the roots of my trees for forcing within a walled border, of, from four to six feet wide; according to the extent of surface which is desired for my trees to cover, and from sixteen to eighteen inches deep. The soil which I use to plant my trees in, is nothing else than the perfectly *fresh turfy top* from a good mellow loamy pasture field, coarsely chopped up; and if the trees are of a proper age, the crop will be as fine the first season as at any future period.

I water plentifully, but judiciously in the swelling season; but more plentifully in the *last stage of swelling*, and then the fruit will swell off to a fine size, if the following attentions are paid.

As soon as the fruit begins to change colour I leave off watering the roots almost entirely, and none over the leaves and fruit till all is gathered; at the same time exposing them as much as possible to the *direct* action of the sun's rays and atmospheric air, till all is gathered; and that I may lose no time in my forcing, by so much exposure to the atmospheric air and direct rays of light, I allow the house to be very hot in the morning before I give air; and then I give it by degrees, till the roof is *completely thrown open;* and again, unless rain falls, I do not shut up *till late in the day*, and then in sufficient time to allow of having a high temperature, either with fire or sun, so as to accelerate the forcing, till I commence gathering, at which period, if I have enough for my demand, I keep all as open and exposed as possible, only sheltering from rain to the last; when I remove the lights, I wash the trees several times, powerfully, and give a good soaking to the roots with soft, rain, river, or pond water.

I renovate the roots every three or four years, by taking off six

or eight inches from the top of my border, not even sparing the small roots; and also a foot or eighteen inches from the extremity of the border, so as to clear away all the roots matted against the wall, and fill up the trench as at first with *fresh* turfy soil, and forking a portion in amongst the roots over all the border, so as to raise it a little above its former height; by this practice the trees are sufficiently renovated for three or four years more, and do not receive such a check as by the Dutch practice. It is astonishing to see the extraordinary accumulation of spongelets which have ramified through every part of the fresh soil by the time the fruit has stoned.

No tree will thrive, whatever the soil may be, if insects and moss are suffered to harbour upon them; and the best time to remove them is just when the winter pruning is over; I then go over every tree about the houses and walls, in the most careful manner; first scraping off all possible extraneous matter, after the trees are taken from the trellis or wall. My composition is as follows:—

The strongest drainage of the farm-yard one gallon; soft-soap one lb.; flowers of brimstone one lb.; mix; let all stand for several days, stirring the mixture three or four times a day; get ready some finely sifted quick-lime, and stir into it, till of the consistence of good stiff paint when it is ready to be applied; its effects are certain and excellent.

The tools I lay it on with are painters' sash-tools, of different sizes. I coat over, carefully every part of the tree so effectually, that not a bud, chink, or crevice escapes the mixture. I use the whitest lime for my hot-houses, as, when dry I can see any axil of a bud or crevice that may have escaped the first dressing; and to make sure I go over them two or three times. After such a dressing I find all animalcules so completely destroyed, that neither green fly, thrips, scale, or red spider is to be seen during the season.

I am indebted to our excellent, and indefatigable President for the above recipe with some little alteration.

As white lime does not look sightly upon wall-trees, I either mix soot with it, or else use the mixture without either the soot or lime; and frequently, instead of the drainage of the farm-yard, I have employed tobaconist's liquor, mixed with soft-soap and sulphur.

I am,

SIR,

Your most obedient and very humble servant,

JOHN MEARNS.

VII. *On the power possessed by Plants of absorbing coloured infusions by their roots.* *By* G. J. Towers, *Esq. C.M.H.S.*

Read Nov. 4, 1834.

I am well aware that many of the most eminent philosophers have immersed cuttings of a vast variety of plants, herbaceous as well as frutescent, into coloured infusions, with a view to detect the conduits of the sap. For several seasons, I adopted the same method myself, and always traced deposits of the colouring matter made use of, among, and around (rather than within) those bundles of fibres, which were considered the conducting vessels of the ascending sap. I investigated these processes and the effects produced, by every means, and in every way within my command; and though I witnessed enough to afford a stamp of truth to the testimonials of the writers I consulted, yet I could never trace the results to the extreme minutiæ which I found recorded. I yielded a tacit assent to the evidence of great authority, and concluded that my own method or machinery, were, to a certain extent, defective: but I did not remain satisfied, for it was evident that mutilations, and such all cuttings are, could never afford legitimate proofs of the precise nature, nor even situation of the nutritive organs, that are actuated by the vital principle. I therefore resolved to take another course; and believing the Balsam to afford one of the readiest means of inspection, struck several cuttings in the spring, or took young seedlings, with pure transparent stems; and after washing their roots, immersed them in strong infusions of log-wood, others I retained in pots of mould, and watered the soil with the coloured liquor. I found that in every instance

growth was impeded; but as the plants lived, I, after a week, ten days, or even a fortnight, dissected them, viewed the parts in every light, by every commandable power of glass, in water and without it. Under every circumstance, not a particle of the colouring matter appeared in any spot, cell, or vessel, throughout the stem. Having mentioned this (in passing), while writing on vegetable food, a writer in reply, asserted that, if I had employed madder, I should have detected the colour which would have passed. I soon recollected that Sir H. Davy had mentioned that dye; and on referring to page 245 of the Sixth Agricultural Lecture, read, that "the radical fibres of plants made to grow in infusions of madder are tinged red;" but this is saying just nothing, as to the point insisted on, for the mere dyeing or tinting of the parts inserted in the liquid, affords no evidence of the ascent of that liquid: but he adds "that substances which are even poisonous to vegetables are absorbed by them." This latter assertion bears upon the enquiry, and to set it at rest I employed three modes of investigation.

July 18, 1834, I took three large cuttings of clear white stemmed Balsams, placed each in a phial of pure water, and set them close against the side glass of the east end of my stove; no bottom heat was used, nor was shade interposed. In a few days, processes were formed at the bases; in ten days (28th) the three plants had perfect, white, numerous roots. I lifted them carefully one by one out of each phial, and planted them successively in as pure, simple, sandy loam as I could select; not admitting a known particle of decomposable matter, into the soil. I gave water only for a day or two, shading the plants, till I felt sure that vegetation was active; but they never shrank, and were covered with blossom buds; the greater number of which, were pinched off; the pots were small sixties.

1st. Two solutions had been prepared, one of a drachm of powdered Brazil wood, in four ounces of water, adding four or five

drops of solution of caustic potash. This brought out at once, a deep mulberry crimson, and the slight stimulus of the alkali, might, it was conceived promote the object in view.

2nd. The other solution was four ounces of rain water, and one fourth of a fluid drachm of a concentrated fluid oxy-muriate of iron, of a deep orange tint. This formed a liquid so austerely astringent, that it was found unpleasant to rince the mouth with it; it is perhaps, of all the preparations of iron, the most delicately sensible to the minutest atom of any prussiate.

With each of these solutions I copiously watered the Balsam, having carefully marked the pots, so that no mistake could occur. A third Balsam I watered with pure water only. These processes were continued till the 14th of August; and then, to insure the saturation of the soil, and have no question of doubt, I placed some solution of iron in one earthen vessel and some Brazil wood in another; and placing the Balsam into its appropriate vessel, poured a quantity of the fluid over the soil till the rim of the pot was reached, and then left. the plants standing in the saucers: thus, one young Balsam had been regularly watered over the surface of its soil for sixteen days (as required) with a strong colouring fluid. A second had been similarly treated with an astringent metallic preparation; and finally, each was immersed as it were, and left in its appropriate fluid till every drop was absorbed. The plant moistened with water, was merely supplied as it became needful. I may add that as the heat of the stove was very great at times, and the plants stood open to the full sun, I once or twice gave all of them, a little rain water alike, which rather tended than otherwise, to wash the artificial fluids among the earthy particles. But after the two were immersed, no more water was given, and on the 17th I took out large slices of the stems for investigation.

Not a tint of colour, red or yellow, nor any difference in appearance could be detected, by myself, or one of my sons, either by the naked eye, or by any mode of microscopic investigation. I then tested the three stems, and the three detached portions, and also, horizontal and transverse slices of each.

1st. That which had been watered with Brazil infusion, with liquid green sulphate of iron, which I found would instantly convert any stain of the infusion on white paper, into a dark bluish grey; but the plant, or its cuttings afforded no shade of grey, nor change whatever to the test.

2nd. The iron watered plant and its cuttings, were tested by prussiate of soda; this, applied to the liquid, gave an immediate precipitate of prussian blue. No sign of change, however, no blue deposit could be perceived in the plant, or its parts.

3rd. The wounded place of the watered Balsam was then touched with a minute drop of even the sulphate of iron, (which is in no degree so sensitive to a prussiate, as is the oxygenated solution) and now, on applying a pin's point of prussiate of soda, blue became apparent among the wounded vessels. Finally, the amputated part of the water-moistened plant was cut, sliced and tested with sulphate of iron on one, with prussiate of soda on another, and no chemical deposit, no blue, or greyish stain could be traced on either. I have thus proved by a variety of methods and tests, that waterings by liquids and chemical agents produce no evidence of the nature or situation of the sap-vessels in the Balsam. The growth also of the three plants yield further collateral proofs, for the young Balsams when first planted in the pots of sandy loam were, though stout and firm not seven inches high. During the course of the moistenings, they all grew well and healthily; and I perceived no difference in them, unless it were that the plant with muriate of iron, assumed a beaded growth

and threw out two or three small laterals, whereas, the others continued erect; all continued to show blossom so persistingly, that I ceased to pull them off. At the period of examination, the soil watered with infusion was blackened throughout: that with iron was coloured by rust of a yellow tint. When the experiment was concluded, being willing to see the fate of the wounded plants, I took them out of the pots with entire balls, and set them in the open border. The plant simply watered, had been cut too deeply and broke off, and the stem decayed: that watered with iron was not safely tied up, and the wind twisted it, so that it fell, but did not snap off at the wound; it has expanded four or five lilac and white large blossoms; and has on it twice the number of buds; it is now secured to a stick, and I doubt not will grow. The third plant is covered with white and pink blossoms, and these with buds amount to thirty or more, though the plant is scarcely a foot high.

One more fact remains to be mentioned, and it is most important. I caused another plant to strike in water, and having prepared an infusion of Brazil wood, and a solution of iron, both as before described, I carefully removed the new rooted cutting from water, and placed it with a simple slip from off another Balsam, together in solution of iron, soon after, I placed a cutting fresh from a plant in the infusion of Brazil wood. The rooted plant was killed in a few minutes; it drooped, fell over the rim of the vessel in a state of complete flaccidity, and dwindled to a close collapsed thread; the cutting perished within six hours. That also in the red infusion never showed health; leaf after leaf curled, became brown and fell off. In three days the mere stem only remained.

Thus it is proved, that the identical liquid which yields life, support, and health to roots when ramifying in a bed, or matrix of

earth, will destroy as with a stroke of lightening, those same plants when they are exposed to its immediate agency.

I argue th enfrom the results which I have detailed, first, that, coloured, or chemical infusions and liquids will not enter into the vascular or cellular system, provided the plant, either by its own vital energy, or by the decomposing power of the soil, remain in a state of health and power to develope its new parts; therefore that, no precise knowledge of the sap vessels can be obtained by such artificial means as have usually been employed. Secondly, That where a plant ceases to grow, turns yellow, and evidently becomes sickly, it may absorb unnatural aliment; not however through its regular organs of absorption, but by diseased action through, in all probability, abraded surfaces; hence then, while vital energy acts, and health remains unimpaired, true sap alone is generated. The office of soil is to reduce all substances to its own nature; and this it speedily effects through the stimulus of living vegetation. If, however, substances foreign to soil superabound, injury, as abrasion, or corrosion is, I apprehend induced; diseased action and absorption supervene, the plant becomes poisoned, sickens and perishes.

VIII. *On the means employed in raising a tree of the Imperatrice Nectarine. In a Letter to the Secretary. By* T. A. Knight, *Esq. F.R.S. President.*

Read February 3, 1835.

Dear Sir,

You informed me in the last spring that our garden did not contain a tree of the Imperatrice Nectarine, and that you wished to obtain one. I, in consequence, promised that I would raise, and send you one as soon as I could; and I believe that the means which I employed in raising a tree of that variety, will prove that I have not lost time in proceeding to perform my promise.

The tree which I send is composed of an almond stock, which sprang from seed early in the last spring, into which two buds were inserted on opposite sides in the end of April; and as soon as those had properly united themselves to the stock, that was removed from the forcing house, and placed under a north wall. After a few days it was headed down, and brought again into the forcing house, when the two inserted buds vegetated, and each produced a lateral branch, which has acquired the length of about two feet six inches, and has formed a few blossom buds. I had previously, early in the spring, grafted an almond stock, which was a year old, with the Imperatrice Nectarine, with the intention of obtaining a tree to send to you; but it acquired, early in the summer, too large a size; and it was consequently planted out to fill up a vacancy upon my south wall, where it has produced two branches, each of which is more than six feet long; and it has covered fifty square feet of the wall with much excellent bearing wood. I have never witnessed such rapidity, and excellence of growth, in a peach, or nectarine tree, planted at the usual periods.

The almond as a stock for the peach and nectarine possesses, I think, every good quality, except that of bearing transplantation very well, and in that respect alone it is inferior to the plum stock. I have, on this account, sent the little plant abovementioned in the pot, in which the almond was first planted.

In the soil and climate of this place, the Imperatrice Nectarine is in my estimation, and in that of a great many other persons, who have tasted it, the best fruit of its family. It presents, I think, a greater concentration of taste and flavour than is found in any other variety, which I have cultivated. It is inferior in size to the Downton Nectarine; but that, in favourable seasons, is here very large; one measured in circumference nine inches, and several of them exceeded eight inches and seven lines. I named it the Imperatrice Nectarine, because the first fruits, which I saw, shrivelled much upon the tree; but those have not subsequently done so, more than some other varieties of nectarines.

I will request that the little tree sent may be planted in fresh unmanured soil without having the branches shortened, and so superficially that a part of its roots may remain permanently visible above the soil. The fruit, which it will produce, will not be nearly as good as that of an older tree; and it is therefore my wish that some buds should be taken from it in the next season, and inserted into the branches of more mature trees.

I remain, dear Sir,

Sincerely yours,

T. A. Knight.

Downton, Dec. 17, 1834.

IX. *Abstract of a Memoir on the Cultivation of French Pears in Scotland, and on the foundation and management of Fruit Borders, with the view of bringing the Trees into a bearing state at an early period of their growth, and increasing their general productiveness. By Mr.* Gregor Drummond, *Gardener to Sir* Robert Preston, *Bart. Communicated by the Council of the Caledonian Horticultural Society.*

Read April 7, 1835.

The attention of Mr. Drummond seems to have been particularly directed to the subject of this memoir by the following circumstances. The property of Valley Field, which belonged to the late Sir R. Preston, is situate on the north side of the Frith of Forth, and possesses a fine southern aspect. The site of the cottage-garden, in which Mr. Drummond's experiments were first made, is placed close on the Frith, and was previously occupied by pans and all the other buildings required for the manufacture of salt. In 1815 and 1816, these buildings were removed, the ground was enclosed by a wall, a cottage erected, and one part of the enclosed area was laid out as a flower garden, and the remainder formed into a marine fish pond.

When the ground was levelled for the garden, it consisted almost entirely of coal-ashes, brick-bats, and lime-rubbish, to which were added about fifteen inches of fresh soil to prepare it for the flowers and shrubs. As it was proposed to plant French Pear trees in the borders next to the walls, the fresh soil was there trenched down about eighteen inches, and mingled with the rubbish. Another foot of fresh soil was then laid over the whole surface of the border, and the trees planted.

Mo. Bot. Garden,
1897.

It was predicted that a border so formed would never answer, but would assuredly canker the roots of the trees; this however has not happened. On the contrary, the Crasanne, Saint Germain, Chaumontel, Colmar, Brown Beurré, Bergamotte de Paques, and Jargonelle, have all produced fruit the *third* year after they were planted, and have continued to yield excellent crops ever since, far greater than similar trees planted in the deep rich borders of the other gardens. Of these latter trees, many had been planted *twelve* years before they produced any fruit: they grew however vigorously, ran greatly to breast-wood, and continued to grow so late in the season that the flower-buds were frequently but ill-formed, and the young wood imperfectly ripened. The fruit also, which they produced, was borne chiefly at the ends of the branches, and was frequently hard and gritty at the core. On the other hand, the trees in the cottage-garden seem to have acquired a different habit; they did not indeed grow so vigorously, and they produced little breast-wood; but they ripened their young wood earlier in the autumn, and fruited more regularly over the whole surface of the tree. On a given surface of wall therefore, not only was the produce of the cottage-garden tree greater, but its quality much superior.

The early productiveness and fertile habit exhibited by the trees, just mentioned, led to the adoption of nearly the same methods in preparing two other borders. One of these was formed in 1820; as much of the rubbish of old buildings as would form a layer of about fourteen inches in thickness, was spread over the whole border. On this was laid a stratum of rich manure, about 6 inches thick; and the whole was then trenched and turned over in such a way as to mingle the rubbish and manure with the soil of the border, but not going so deep as to encroach on the subsoil. The whole being thus mixed together, and made level, was then covered with about a foot of fine light soil. In the border thus formed, two Crasannes,

two French Bergamottes, two Grey Auchans, and one Muirfowl-egg Pear were planted; they were what are generally called "Dwarf Maiden Plants." All these trees shewed fruit in the *third* year, and bore a beautiful crop in the *fourth* year after they were planted, and the crops produced every year since have been astonishing. The surface of this border every winter, gets a dressing of cow-dung which is dug in about eight inches below the surface.

In 1822, another border was similarly prepared by mixing up the rubbish of an old wall with the soil of an old border, to which no dung was added, lest it might make the soil too rich; but this Mr. Drummond has since regretted, as he finds that where stones and rubbish are mixed with the soil, there is no danger in making a free use of rich manure, In the spring of 1823, French Pear trees were planted in this border, and they afterwards came as early into a bearing state, and continued to be as productive as the trees at the cottage-garden.

By thus mixing stones and rubbish with the soil of the border, and forming the border above the subsoil, we are able to bring French Pear trees into a bearing state at a much earlier period of their growth, and to render some varieties of these trees, hitherto considered as shy-bearers, not less productive than those of the more common kinds.

Mr. Drummond next points to the analogy between his method of forming borders for Pear trees, and that employed, when plants are cultivated in pots or boxes. In the latter, pieces of pot-sherds, shivers or other substances are laid at the bottom of the pot to drain off superfluous moisture, or are sometimes mingled with the soil of the pot or box, when they are of large size, else the fibrous roots of the plant would probably perish during the winter, when vegetation is suspended. Now the roots of wall-trees, in an artificially prepared border, are in a very similar state, if the soil be deep and no stones or rubbish mingled with it; for a great body of

fine earth, without such admixture of stony substances, is too retentive of water during the winter months, which proves very injurious to the fibrous roots of trees in our cold damp climate.

Many opportunities of lifting the roots of trees, in borders differently formed, have afforded illustrations of the foregoing facts; for those roots, raised from borders where the soil was mingled with stones and rubbish, have presented a dense mass of fibrous rootlets; whilst others, which had grown in deep and rich borders without such admixture of stony substances, have exhibited only long naked roots, more or less destitute of fibrous appendages. In the rubbish borders, the fibrous rootlets might be seen to seize, as it were, on some substances of the soil in preference to others; pieces of lime-plaster, or mortar, were generally preferred, being often found enveloped in a mass of such rootlets; next to these, pieces of whinstone and brick were selected by the rootlets; coarse gritty sandstone they seemed to reject, but to like the fine white sandstone which the roots of heaths are so fond of.

In connection with this search after stony bodies, Mr. Drummond mentions some curious facts respecting the directions which roots take in borders formed, in part, of paving stones. If such stones be laid at the bottom of the border with the view of preventing the roots striking into the subsoil, the trees will soon send down their roots until they come in contact with the pavement, over the surface of which they will then spread themselves in every direction. Should their extremities not be able to penetrate the mortar or clay in which the stones are imbedded, they will, after a time, push out beyond them, and then, dipping down, take an inverted position and extend beneath the pavement. On the other hand, if the stones be laid on the surface of the border instead of its bottom, the roots then seem to strike upwards, and spread along the under surface of the stones. In both cases the stones seem to attract and retain moisture, and, during the vegetating season, the

roots strike towards them in order to obtain it; but with this difference in the ultimate result:—when the stones are laid at the bottom of the border, the principal roots are detained there, and their fibrous rootlets are more or less destroyed, during the winter, by the too great moisture to which they are exposed. In such circumstances, the trees grow vigorously, but produce comparatively little fruit, and that of inferior quality. But when the stones are laid on the surface, the principal roots are also formed there; and their fibrous rootlets are thus preserved in a healthy state during winter. Such trees grow less vigorously than in the former case, but they produce excellent crops of fruit, and that of superior quality.

From the results of his experience, the author is led to conclude that two errors are, in general, committed in forming borders for wall-fruit trees. The one is that of trenching too deeply, with the view of increasing the depth of the border, by which the sub-soil is disturbed: the other consists in collecting too great a body of fine earth in the border, without a due admixture of stony substances.

With respect to the first error, or removal of the sub-soil, its effect is to convert the border into a sort of receptacle both for collecting and retaining water, and to bring it nearly to the condition of a flower-pot, whose bottom is immersed in a pan of water. No operation of draining will keep such a border in a condition suited to the welfare of the trees; and nothing can be more injurious to the roots than keeping them in stagnant water through the greater part of the year. If it be wished to augment the depth of the natural soil in the borders, this should be done, not by excavating the sub-soil, but by adding to the height of the upper soil. All hard-wooded trees and shrubs thrive best in a border raised above the level of the surrounding ground. In our damp climate, the roots of the finer sorts of trees thus preserve a healthier state during winter; and on the return of spring, the soil of a raised

border receives more solar heat, which contributes to accelerate and augment the fertile habit of the tree.

As to the second error—that of accumulating too much fine mould without a due proportion of stony substance—Mr. D. remarks that, in the natural soils in which trees best grow, we can seldom penetrate, even in carse lands, above a foot below the surface, without meeting with stones and other substances favourable both to the developement and preservation of fibrous roots. And in local situations, famed for the production of fine fruit or hard-wooded trees, an examination of the soil and sub-soil will shew them to possess the characters above-mentioned, and to be thus favourable to the formation and preservation of fibrous roots. In no instance ought we to collect above two feet of fine earth in a border, without, at the same time, mixing with it a due proportion of small stones, or other solid substances. Such an intermixture of stony bodies contributes not only to augment the number of fibrous roots, but to prevent the accumulation of too much moisture in the winter months.

As the result of his inquiries and experience, Mr. D. recommends the following mode of forming a border, as suitable for every variety of fruit-tree which we are in the custom of raising against walls. He would make the border at least twenty feet wide: it should be composed of two and a half feet in depth of good soil, rather light, with one foot of broken whinstones and lime rubbish, and one foot of cow and stable dung. These several ingredients should be thoroughly mixed together, and when the whole has been levelled, another foot of fine mould should be spread over the whole surface. The walks he would lay down on the surface of the border at the distance of ten or twelve feet from the wall; and this should be done in such a manner as that the surface of the border may have a gentle slope from the wall to the walk, and the slope then be continued from the walk to the natural surface of the ground. On no account must the sub-soil be disturbed.

Those who are advocates for the shallow planting of fruit trees may suppose the border, recommended above, to be too rich, and that it will promote too great luxuriance of growth; but, provided the materials employed favour the production of fibrous rootlets, we can hardly ever make the border too rich. Encouraging such rootlets seems to produce that fertile habit in the tree at an early stage of its growth, which checks any tendency to over luxuriance afterwards; and to turn the powers of the tree to the formation of flower-buds, and consequent production of fruit. Wall-trees are exposed to a higher temperature and greater evaporation than standards, and require, therefore, a larger body of soil and a more copious supply of moisture for their roots than standards do.

Having thus stated his views concerning the proper *formation* of borders, Mr. Drummond proceeds to notice some other circumstances to be attended to in their subsequent management: and this portion of his Memoir is also illustrated by experiment.

When the borders have been properly prepared, success in the cultivation of wall-fruit trees depends more, says our author, on a judicious supply of moisture to their roots, than on any other part of the practice. The necessity of moisture to the due preparation of the food of plants, and to its entrance into the vegetable system, is well known; but if the soil get beyond a certain state of dryness, these necessary operations cannot proceed, and little or no nutriment can be afforded, at the very time, perhaps, when it is required most to assist in the production of fine fruit. The roots also, unable to find nutriment in a good soil, may penetrate into a bad one, and from thence derive matter not only not nutritive, but perhaps pernicious to the vegetating process.

In supplying water, Mr. D. recommends that it be taken from a pond in which it has been freely exposed to the sun. If the pond

be not more than three or four feet deep, the temperature of its water will not differ much, during the summer months, from that of the soil of a border of similar depth. In such circumstances, watering will rather augment than diminish the temperature of the soil; and will in no degree check the chemical changes by which the food is prepared in the soil, or impede the functions of the living organs destined to absorb it. Water from springs and wells, by reason of its coldness, considerably reduces the temperature of the soil, and ought not to be employed 'till its temperature has been raised nearly to that of the soil.

To ascertain the effects, respectively produced by spring and pond water of different temperatures, Mr. D. in the year 1826, made the following experiments:—he selected four peach trees of the same species (Grosse Mignonne), which grew against a wall. Two of these trees were supplied during the summer with water taken from the spring, and the other two with water from the pond. In the border where the trees grew, and which was twelve feet wide, two thermometers were plunged into the soil to the depth of eighteen inches, and its temperature carefully noted at the two stations before the water was applied; and also on the next day, or twenty-four hours after the application of the water. The temperature too of each kind of water was duly observed. These observations being previously made, the border was watered three times during the summer; and each time as much water was given as would have formed about a cubic foot of water over the whole surface. The author has exhibited, in a tabular form, the times when the experiments were made, the temperature of the soil, the kind of water, and its temperature when used; the temperature of the border twenty-four hours after, and the amount of heat gained or lost by the kind of water employed.

The first experiment was made on the 10th of May. At the depth of eighteen inches the temperature of the border was 64°,

and that of the spring water used 46°. In twenty-four hours after the temperature of the border was reduced to 52°, or had lost 12°. At the same time the temperature of the soil being 64° as above, and heat of the pond water 67° the soil at the close of twenty-four hours was 66°, or, instead of losing 12°, had gained 2°.

June 20th, the second watering was given. The temperature of the border at the depth of eighteen inches was now 74°, and that of the spring water 52°. In twenty-four hours the border was reduced to 58°, or had lost 16°. At the station where the pond water was used the temperature of the border at the above-mentioned depth was 77°, and that of the water 82°. In twenty-four hours the temperature of the border was 80°, or had gained 3°.

The third and last watering was performed on the 28th of July. The temperature of the border at eighteen inches below the surface was 72°, and that of the spring water 57°. In twenty-four hours the border was reduced to 61°, or had lost 11° of temperature. At the pond water station the border, at the depth of eighteen inches was 78°, and the water itself 74°. In twenty-four hours the temperature of the border was still 78°, or had suffered no change of temperature from the watering it had undergone.

It is very clear from these facts that whilst spring water greatly cooled the soil, that from the pond exerted no such operation, but on the contrary often raised its temperature.

In proceeding to describe the effects on vegetation produced by these different kinds of water, Mr. D. observes, that on the 10th of May, when the border was first watered, there was no perceptible difference in the appearance of the four trees: they had all excellent crops of fruit. About the first of August, however, the contrast was very striking. No one would then have supposed that the four trees were of the same variety. The fruit of the two trees, which had been supplied with the pond water, was much larger, of a higher colour, and finer quality, than the fruit of the other

two trees, which had been supplied with spring water. The leaves also of the former trees were almost double the size of those of the latter. Even in the following spring the difference was perceptible, as evinced in the larger blossom and more vigorous setting of the fruit.

In the management of borders, it is of great importance, continues Mr. D., to preserve the surface-roots of trees. At the cottage garden the borders have never been dug since the trees were planted; and when manure is applied, it is laid down and covered over with about six inches of the surface mould. The soil, when thus treated, becomes filled to the surface with fibrous roots, which would be injured or destroyed were the border to be dug. When the manure is retained in a body near the surface the border is kept in a moister state, and the roots do not penetrate downwards to the sub-soil in search of water. Even where vegetables are raised, as early crops on the border, the soil is never disturbed to more than six inches in depth; and the crops are ready earlier than in the ordinary mode of digging to the depth of eighteen inches. When the fibrous roots of trees have been injured by digging the border too deep, they will soon be restored if a layer of manure, six or eight inches thick, be first laid on the surface, and then beaten down with the spade, and covered afterwards with about six inches of mould. The roots will at once begin to strike out and run along the undersurface of the dung, forming at length a complete mass of fibrous roots.

When vegetables are raised on fruit-borders, they may affect the atmosphere, in regard both to heat and moisture, in a degree that may sometimes prove beneficial, and at others injurious, to the trees. When the wall, for example, becomes heated, the air in contact with it is rarified and carried upwards, and fresh air from the surface of the border moves forward to supply its place; in this way a current of air is soon formed, which continually passes over the heated

wall as long as it retains an excess of heat. Of this circumstance advantage may be sometimes taken where the heat of the wall is excessive; for by keeping the surface of the border in a moist state, we diminish at once the temperature, and augment the moisture of the atmosphere which envelopes the tree. On the other hand, by raking the border, as will afterwards be shewn, we contribute to keep its surface in a dry state; and thereby to increase the temperature, and lessen the moisture of the surrounding atmosphere. At different seasons these opposite practices may be beneficially adopted. Thus in spring, when the trees are in blossom, should a clear frosty night set in, with the prospect of bright sunshine during the next day, it is of no little importance to water the surface of the border before the sun appears, as the evaporation that succeeds will moderate the excess of heat which might otherwise prove fatal to the blossom. On the other hand, when the fruit is swelling it is of equal importance to keep the surface of the border dry, as the temperature both of the soil and atmosphere is then increased, which contributes much to improve the size and quality of the fruit.

When, however, the borders are so thickly covered with vegetables as almost to prevent the access of the solar rays to their surface, such covering will contribute much to lower the temperature of the soil, and of the atmosphere in contact with the wall. To ascertain the extent to which this might take place, the author made the following experiments on a border covered with a strong crop of cauliflower, which completely shaded the surface. He took a thermometer and inserted its naked bulb about half an inch into the soil of the border, where it was covered with the vegetables. A second thermometer was laid on the surface of the border; and a third was placed in close contact with the wall. A similar arrangement was, at the same time, made with three other thermometers in another part of the border which was uncropped, and

fully exposed to the sun's rays. The border itself was twelve feet wide, and the wall of about the same height in feet. On the 10th of May, 1829, the author made four observations of these six thermometers, between five o'clock of that day, and four o'clock of the next, viz. at five A. M., one P. M., and at ten P. M. of the 10th.; and at four A. M. of the 11th. The results of these observations he has given in a tabular form, of which a copy is exhibited.

May, 1829.	Cropped Border.				Uncropped Border.		
Time of Observation.	Temp. of atmosphere in shade.	Temp. of soil half an inch below surface.	Temp. of soil at surface.	Temp. on surface of wall.	Temp. of soil half an inch below naked surface.	Temp. of naked surface.	Temp. of wall at naked surface.
	°	°	°	°	°	°	°
5 A. M.....	55	68	58	59	70	57	62
1 P. M.....	71	69	76	86	96	113	104
10 P. M.....	54	69	60	58	81	68	66
4 A. M.....	52	60	59	55	70	58	60
Increase of temperature from 5 A.M. to 10 P. M.	16	1	18	27	26	56	42
Increase of temperature from 10 P. M. to 4 A. M.	19	—	17	31	26	55	44

From this table it will be seen that at one o'clock P. M. the close crop of cauliflowers occasioned a reduction of 18° of temperature on the wall, as compared with that of the wall of the naked border: at ten o'clock in the evening the difference of temperature between the two portions of wall was 8°; and even at four o'clock on the next morning the difference was 5°. On the 29th of May the cropped border was 4° lower than the naked one, at the depth of twelve inches beneath the surface.

This effect of cropping, in lowering the temperature of the atmosphere, will however be much less when the sunshine is little and partial through the day; and when the day is wet it will not be be observed. The colour too of the soil will influence the result, a dark soil becoming much hotter than a light coloured one when exposed in the same manner to the solar rays.

Vegetables in borders are least injurious to wall trees when they are planted in rows at right angles to the wall, and at double the distance usually allotted; they do not then so completely shade the soil, and the air is permitted to flow freely through the rows. It will, however, be proper to have them cleared away (when planted opposite to Peach and Apricot trees) about the middle of July, that the borders may have the full benefit of the sun's rays to enable them to ripen the fruit and mature the young wood. After a wet night the borders should also be raked, to aid the drying of their surface. This simple operation will increase the temperature of the surface of the border, and of the wall many degrees. On one occasion, after two days of continued rain in July, 1829, the temperature of the surfaces of the border and wall were the same as that of the atmosphere, viz. 52° at four o'clock in the morning. At six o'clock the weather cleared up, and a considerable extent of the border, opposite to a hot wall, was raked, so as to dry the surface. At one o'clock a thermometer, laid on this raked surface, indicated 118°; and another applied to the wall opposite to 106°; whilst, on the unraked surface of the soil, the temperature was only 86°, and on the corresponding portion of the wall 89°. The operation, therefore, of raking the surface of the border, raised its temperature 32° above the unraked surface, and the temperature of the corresponding part of the wall 17°.

The London Medal, for 1833, placed at the disposal of the Caledonian Horticultural Society, was voted to Mr. Gregor Drummond for the Communication, of which a copious and correct abstract is here given.

Patrick Neill,
Sec. Cal. Hort. Soc.

X. *Descriptions of several New Varieties of Fruit raised by* Thomas Andrew Knight, *Esq. from Seed; together with Notes thereon by Mr.* Knight.

The following account of some of the new fruits raised at Downton has been prepared from descriptions made in the Society's Garden by Mr. Robert Thompson, to which notes have been added by Mr. Knight. As these varieties appear of considerable importance, it was considered desirable that an early opportunity should be taken of making the public acquainted with them.

1. March Bergamot Pear.

Fruit middle-sized, in form and appearance resembling the Autumn Bergamot. Flesh buttery, a little gritty near the core, rich and excellent. Season, March, or later.

Note.—Owing to its resemblance in form to the Autumn Bergamot, and its ripening chiefly in March, (it may be preserved later) I have named this sort the March Bergamot. The sample sent was not favourable in any respect, the most perfect having been previously eaten, owing to my having erroneously supposed that I had sent a sample of the fruit in autumn. No pains were taken to preserve those that remained, and which it appears were found to be excellent after enduring the carriage to London in the beginning of March. It will be found a much larger and a much better pear when grown in the Garden of the Society. The fruit is, I think quite as large as that of an old Autumn Bergamot tree was, which formerly grew in the same soil and

climate, and at the distance of a few feet only. Both this variety and the Pengethley Pear would probably be greatly improved if grown upon a wall, and so cultivated I believe both would be found very valuable in cold and unfavourable situations in which the French and Belgic varieties could not be made to succeed.

2. Pengethley Pear.

Fruit middle-sized, obovate, a little curved at the stalk. Eye small and a little open; stalk about half an inch in length. Skin yellowish-brown and considerably russeted. Flesh yellowish, juicy and rich: a very good pear. Season, February and March.

Note.—The Pengethley Pear remains in perfection quite as late in the spring as the March Bergamot; and it is larger and more juicy, and its appearance more inviting. Some persons who tasted both in the present spring thought it the best pear of the two. The very high price of pears in the spring in the London and other markets, induces me to think that both these varieties might be cultivated with much advantage. This first appeared in the autumn of 1831, and was then very fine. The tree is large and its growth excessively luxuriant.

3. Ross Pear.

Fruit large, obovate. Eye open and slightly sunken. Stalk short, moderately thick. Skin yellowish green interspersed with russet. Flesh inclining to yellow, gritty near the core, but rich, juicy and sugary throughout. Season, January.

Note.—This first appeared in 1832. The fruit was all of large size; and I suspect that in a more favourable season and better climate it will become very large. The growth of the original tree is extremely luxuriant.

4. Oakley Park Bergamot.

Fruit middle-sized, roundish obovate, resembling a large Swan's egg. Eye partly open, in a regularly formed cavity. Stalk an inch and a half in length, rather slender, and a little sunk at its insertion. Skin greenish-yellow, sprinkled with russet. Flesh buttery and melting, rich and excellent. Season, October.

Note.—The tree is of free growth and has borne in the three last years.

5. Brougham Pear.

Nearly of the middle-size, obovate. Eye open in a regularly formed depression. Stalk short. Skin yellowish-russet. Flesh yellowish-white, buttery, a little gritty near the core, sugary and rich. Season, November. This sort is highly deserving of cultivation where flavour rather than size is the principal object.

Note.—This is not a small pear, though the sample sent was small. It is at least as big as the Autumn Bergamot; but I had sent away to several friends the largest and best samples; and I never saw my pears so small as in this year (1833), owing to what cause I do not know; but probably to the drought in the early part of the summer. I have named it the Brougham Pear, a sample sent by me to Lord Brougham having been approved by his Lordship.

6. Bringewood Pear.

Fruit middle-sized, pyriform. Eye open with the segments of the calyx prominent. Stalk long and rather slender. Skin yellowish-brown, almost covered with russet. Flesh yellowish-white, a little gritty near the core, the rest buttery, rich and very excellent, with something of the peculiar flavour of the Monarch Pear. Well deserving of cultivation. Season, end of October till beginning of December.

Note.—This variety did not prove nearly as good in the following

year as in that in which the sample was sent to the Society; it was nevertheless a good pear, though inferior to others of the same season of maturity.

7. Moccas Pear.

Fruit middle-sized, obovate, with a short stalk. Eye somewhat open and very slightly sunk. Skin brown. Flesh inclining to yellow, melting, juicy, rich and high flavoured, resembling in this respect the Monarch Pear, and almost equal to that very excellent variety. Season, December.

Note.—This is, I think, a very fine pear, but the sample sent was not equal in quality to the former produce. It is somewhat singular that all my pears ripened much later, and less perfectly in the last, (1831), than in the three preceding cold and wet seasons: probably owing to the paralyzing effects of the very severe frost of the 7th of May, which destroyed almost all the blossoms of the pears and apples in the surrounding orchards. Tree of excessively rapid growth; and very productive of blossom, which I have reason to believe capable of bearing, without injury, very unfavourable weather.

8. Broom Park Pear.

Fruit nearly middle-sized, roundish. Eye in a moderate sized hollow. Stalk about an inch in length, moderately thick. Skin entirely covered with cinnamon-coloured russet. Flesh yellowish, melting, juicy, with something of a melon flavour, sugary and rich. Its very peculiar flavour may be said to partake of the melon and pine-apple. Season, January. A sort highly deserving of cultivation.

Note.—The singular mixture of flavour in this pear was noticed here as well as in London. The tree is fine, and has borne well in two seasons in which alone its fruit has existed.

9. Croft Castle Pear.

Fruit middle-sized, oval. Eye open in a shallow depression, with the segments of the calyx reclining. Stalk about an inch and a half in length, rather slender, and somewhat obliquely inserted. Skin pale yellow, not glossy but rough with elevated dots and partially russeted. Flesh whitish, a little gritty, but melting and very juicy, rich and sugary. An excellent pear. Season October.

Note.—A variety of dwarfish growth, but very productive of fruit.

10. Eyewood Pear.

In shape and size very similar to an Autumn Bergamot; but of a deeper cinnamon russet colour. Flesh yellowish-white, melting, buttery, juicy and very high-flavoured. It is doubtful whether it would be exceeded by Gansel Bergamot in a better season for standards than that of 1831, when the above description was made. Season, October or November.

Note.—In 1833, when other varieties of Pears did not attain their usual excellence in Herefordshire, this was found to be very good. The tree is of very free growth, and has borne well during the last four years, the period commencing with its existence, as regards a bearing state. The sample sent was below the average size.

11. Dunmore Pear.

Fruit about the size of a Brown Beurré, obovate. Eye open, slightly depressed. Stalk about an inch in length, of medium thickness, rather fleshy at its junction. Skin brownish-red next the sun; yellowish with a scattering of brown where shaded. Flesh yellowish-white, melting and extremely juicy, sugary and rich; a little gritty near the core, but on the whole a most excellent pear. Season, end of September or beginning of October.

Note.—This variety is as large, I think, as the Brown Beurré, and I have never tasted the last mentioned sort better than the Dunmore. When it has remained to ripen and grow yellow upon the tree, I have thought it the most melting and best pear of its early season. The birds are apt to destroy most of the crop prematurely. The tree is fine and perfectly healthy. Grafts of it which were inserted into stocks two years only ago, afforded an abundant blossom in the last spring, and are now bearing fruit; though the weather in part of the spring was extremely unfavourable and destroyed every blossom of the more delicate varieties. The trees are of very rapid growth and the varieties appear to be extremely well adapted to cold and late situations.

12. Party-coloured Grape.

Bunches rather small, oblong, slightly shouldered, rather loose. Berries small, round. Some bunches from the same plant are entirely purple, whilst others are all of the colour of the White Muscadine; some are chiefly purple with a sprinkling of berries entirely green or variegated; and others are the reverse, and some are of a grizzly colour. Some berries are distinctly one half purple and the other half green; others are striped. The pulp of the purple berries is purple; that of the white greenish yellow. Pulp juicy and sugary, with a moderate quantity of acid; not unlike the White Muscadine in flavour. Stones, one or two perfect in each berry. It will keep for a considerable time after the bunches are cut.

Note.—This little grape, which is seen of many different colours, has in every season ripened tolerably well in the cold climate of this place; certainly better than any other which I have grown and I believe it to be better adapted to make wine in a cold climate than any cultivated. I feel confident that it is superior to most of the grapes cultivated in France and that the merits of

the French wines depend greatly more on the skill of the makers, than upon the merits of their grapes.

13. Monarch Pear.

(Described 2nd. Series, Vol. I. p. 106; pl. 2, fig. 4.)

Note.—I had this year, (1834), a sufficient quantity of the Monarch Pear to enable me to ascertain the specific gravity of its juice which is 1096, that is fifteen above the Stire Apple, and about that which a dissolution of 2lb. 6 oz. of sugar would give to 8lb. of water. I doubt whether the specific gravity of the juice of the grapes which afford the best French wines, be much greater, and the taste and flavour of the expressed juice of the Monarch Pear appear to me to be very delightful. I am planting it very largely for Perry, in perfect confidence that sixpence per imperial quart of its expressed juice, will afford a very high remunerating price. I imagined till the present season that the excessively vigorous growth of the variety would render it unproductive as a wall-tree, but grafts inserted three years ago are now bearing fruit and have formed a most abundant blossom for the next year.

14. Dunmore Plum.

Fruit about the size of Coe's Golden Drop, oval, distinctly marked by the suture, flattened, or slightly depressed on the apex. Stalk moderately strong, about three quarters of an inch in length. Skin in colour like Coe's Golden Drop. Flesh adhering to the stone, yellowish, extremely rich and sugary—so much so that it shrivels and dries like a preserved prune. Stone tolerably large, irregularly elliptic, flattened. A most valuable late plum. Ripe in October.

Note.—This variety sprang from a seed of the Purple Imperatrice and pollen of Coe's Golden Drop, and the trees grow and

bear freely in the climate of this place as standards. It ripens a fortnight later than Coe's Golden Drop, and has hitherto wholly escaped the depredations of wasps. It is in my estimation a valuable late variety of plum though I consider it inferior to the Ickworth Imperatrice; and it is in the climate and soil of my garden a full size below the Coe's Golden Drop.

XI. *Note upon Mimulus cardinalis; a new, hardy, herbaceous plant. By* John Lindley, Ph. D. F.R.S. &c. &c. *Assistant Secretary.*

Read Nov. 4th, 1835.

From the Californian seeds most lately received by the Society from Mr. Douglas, has been raised an apparently hardy herbaceous plant, the beauty of which is so remarkable as to have induced the Council to direct a figure of it to be prepared for publication in the Transactions.

It is a species of *Mimulus*, to which the name of *cardinalis* was added by its lamented discoverer, in consequence of the brilliant scarlet of its blossoms. Its stems are from one and a half to two feet high, erect, loosely branched, and covered with long delicate hairs. The leaves, which are of a pale yellowish green, are also hairy, of an obovate figure, with regular toothings, and connate at their base, which is their narrowest part. The flowers grow singly in the axils of the leaves, which are shorter than the hairy peduncles. The calyx is strongly ribbed, obliquely five-toothed, soft and hairy. The corolla is internally of the brightest scarlet, but of a pale reddish yellow on the outside; its border is divided into four rather convex lobes, all of which are oblong and notched at the end, and the lowermost is the widest. Along the base of each segment passes a short, deep, reddish brown line, which loses itself in the tube.

Cultivated in the open ground, this plant flowered abundantly from July to the end of September. It appeared to prefer a moist rich soil, and did not suffer at all from the ardent sun to which it

Mimulus Cardinalis.

was exposed at the foot of a south wall. It produced seeds in some quantity, and struck so readily from cuttings, that there is little doubt of its soon becoming a common ornament of the gardens.

The accompanying plate has been prepared from a drawing by Miss Drake, and exhibits as near an approach to the brilliancy of the original as the power of water colours will produce.

TRANSACTIONS

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The Committee appointed by the Horticultural Society to direct the publication of the Papers read before them, take this opportunity to inform the Public, that the grounds of their choice are, and will continue to be, the importance and singularity of the subjects, or the advantageous manner of treating them, without pretending to answer for the certainty of the facts, or the propriety of the reasonings, contained in the several Papers so published; which must still rest on the credit or judgment of their respective Authors.

It is likewise necessary, on this occasion, to remark, that it is an established rule of this Society, to which they will always adhere, never to give their opinion, as a body, upon any subject, either of Nature or Art, that comes before them. And therefore the thanks which are proposed from the Chair, to be given to the Authors of such Papers as are read at the General Meetings, or to the Persons who send fruits, or other vegetable productions, or exhibit Inventions of various kinds to the Society, are to be considered in no other light than as a matter of civility, in return for the respect shewn to the Society by these communications.

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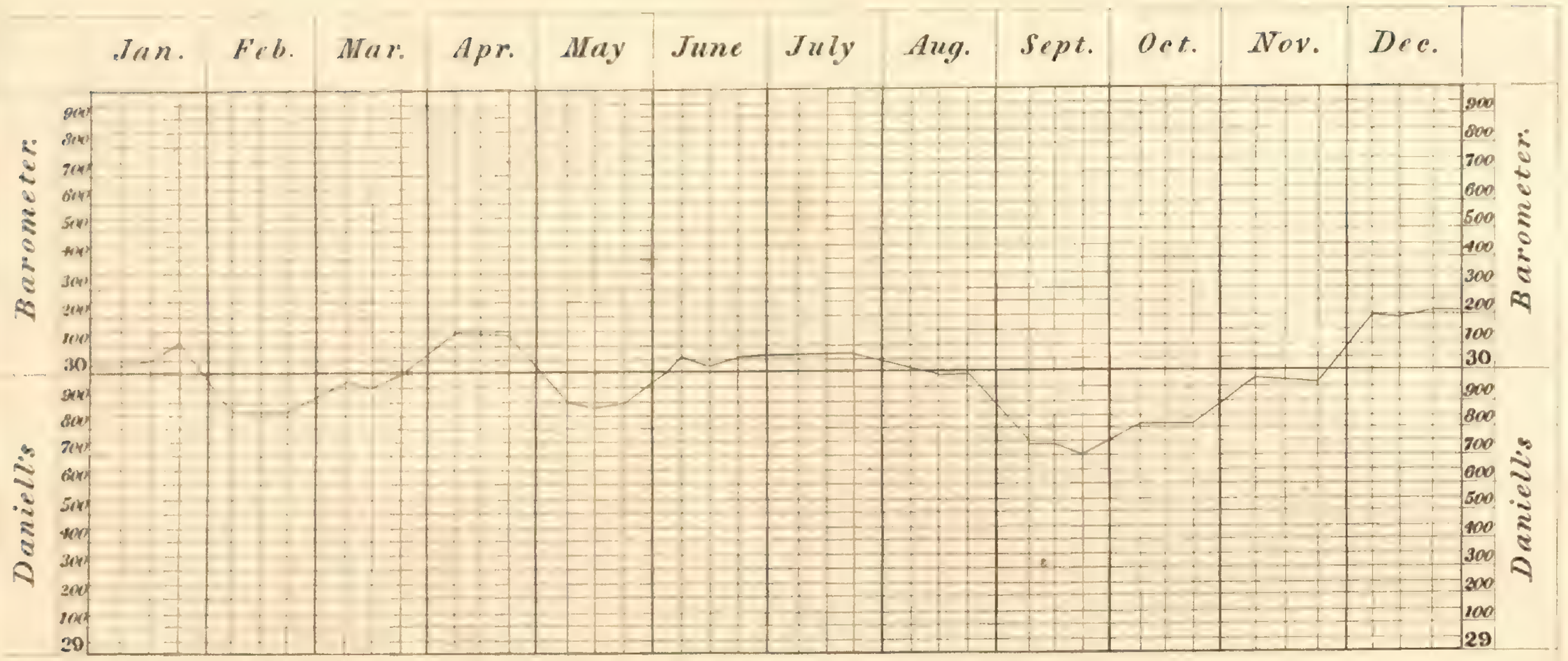
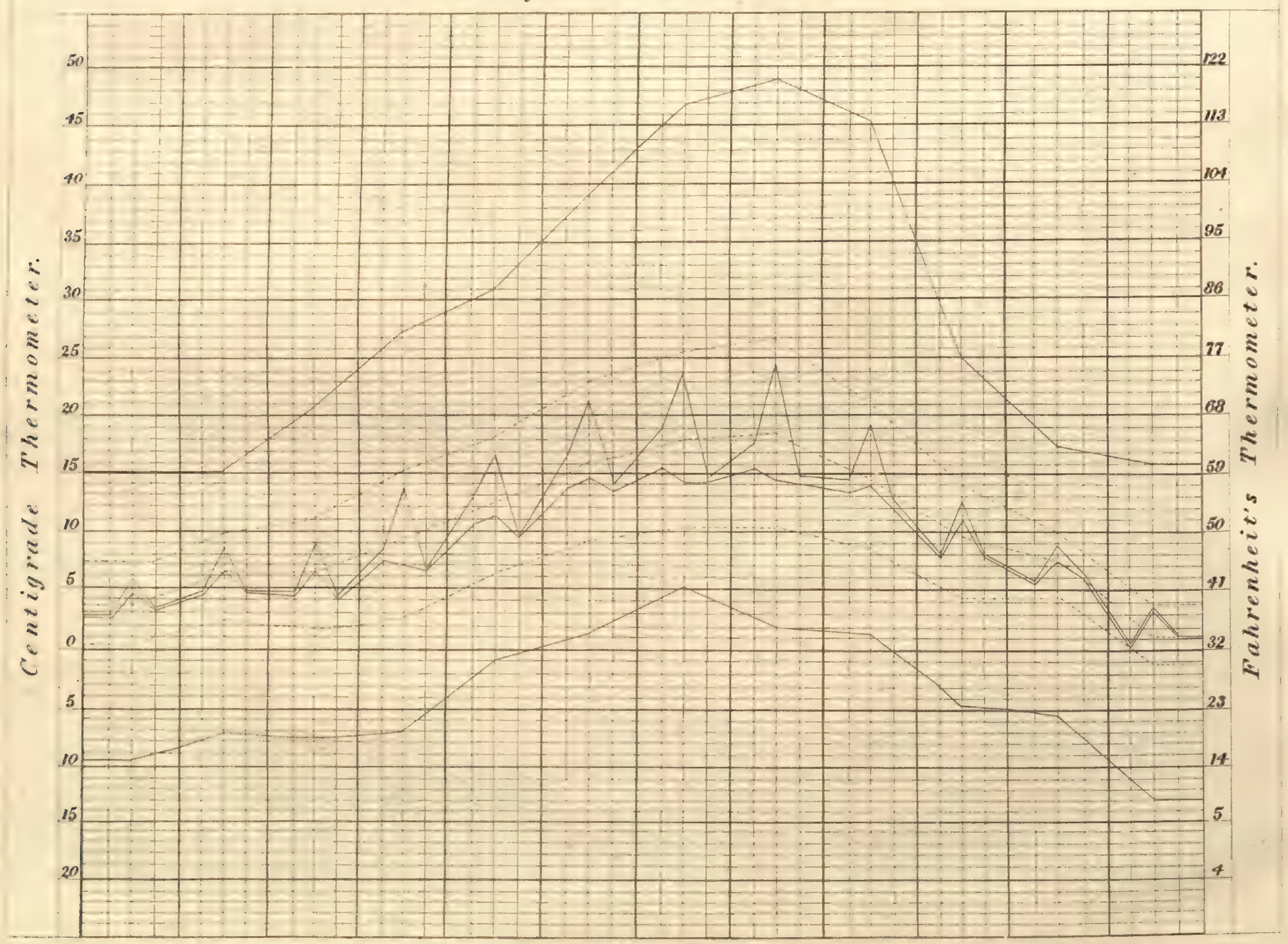
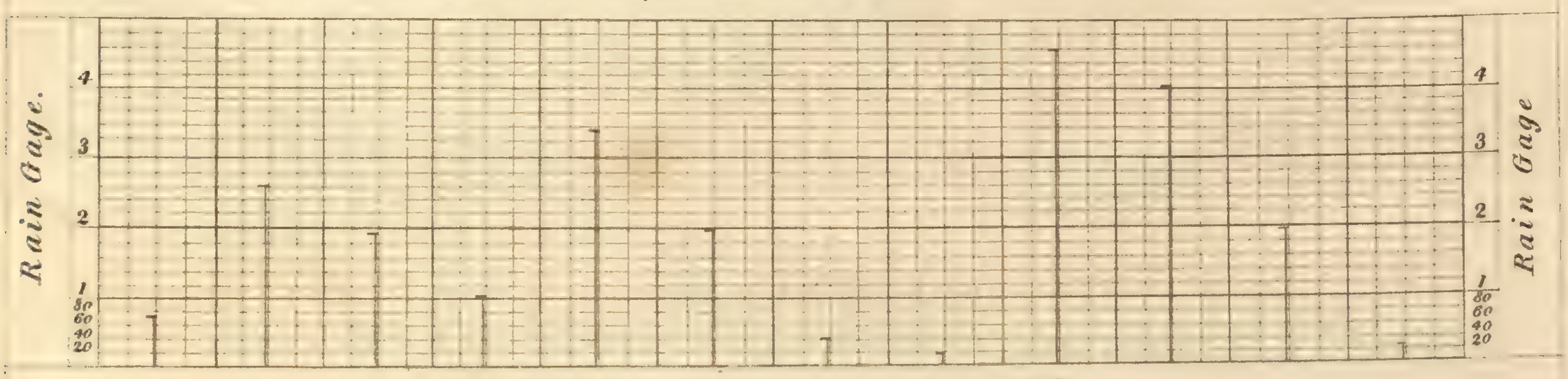


Mean Height of the Barometer, in 1835.



Mean and Extremes of Temperature and Mean of the Dew-Point, in 1835.



Monthly depth of Rain, in 1835.

XII. *Journal of Meteorological Observations made in the Garden of the Horticultural Society at Chiswick during the year* 1835. *By Mr.* Robert Thompson.

This Journal has been kept on the same plan as those preceding, except that, by order of the Garden Committee, the Centigrade Thermometer has been substituted for that of Fahrenheit. The averages are, however, also given according to the latter. When the temperature is below zero of the Centigrade Scale, the degrees have the sign (—) prefixed.

JANUARY.

	1835.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	Th.	1	30.145	8	8	—	Cloudy	30.326	7	6	1	Cloudy	30.631	8	8	—	Fine
	F.	2	—.814	8	2	6	Overcast	—.830	6	2	4	Hazy	—.856	4	4	—	Ditto
	S.	3	—.818	0	0	—	Slight Haze	—.781	4.5	1	3.5	Slight Haze	—.730	2	2	—	Frosty
	S.	4	—.667	—2	—2	—	Clear & Frosty	—.635	4	0	4	Fine	—.606	—2.5	—2.5	—	Clear&Frosty
	M.	5	—.603	—0.5	—0.5	—	Cloudy	—.601	2.5	2.5	—	Hazy	—.606	—1	—1	—	Frosty & Fine
D	T.	6	—.444	—7	—7	—	Dense Fog	—.555	—4	—4	—	Fine	—.475	—5	—5	—	Do. & Foggy
	W.	7	—.329	—7	—7	—	Ditto	—.313	—5	—5	—	Dense Fog	—.240	—5.5	—5.5	—	Ditto
	Th.	8	—.199	—2	—2	—	Hazy	—.141	0	0	—	Hazy	—.104	—2.5	—2.5	—	Ditto
	F.	9	29.936	2	2	—	Overcast	29.837	6	6	—	Overcast	29.688	9	9	—	Stormy&Wet
	S.	10	—.860	2.5	2.5	—	Clear	—.877	7	4.5	2.5	Clear and Fine	—.817	8	8	—	Fine
	S.	11	—.838	10	10	—	Overcast	—.802	11	11	—	Cloudy	—.903	9.5	9.5	—	Slight Rain
	M.	12	—.946	7	7	—	Ditto	—.931	11	11	—	Overcast	—.900	7	7	—	Fine
	T.	13	—.731	3	3	—	Fine	—.636	7.5	6	1.5	Very Fine	—.570	7	7	—	Overcast
○	W.	14	—.503	6	6	—	Hazy	—.475	11	10	1	Cloudy	—.541	8	8	—	Rain
	Th.	15	—.677	8	8	—	Fine	—.715	9.5	7	2.5	Very Fine	—.614	8	8	—	Fine
	F.	16	—.081	8	8	—	Stormy Rain	—.109	8	8	—	Clearing	—.496	3	0	3	Very Clear
	S.	17	—.623	0	—1	1	Clear & Frosty	—.791	4	1	3	Fine but Cold	—.889	3	3	—	Clear & Frosty
	S.	18	—.843	—3	—3	—	Frosty&Foggy	—.772	0.2	0.2	—	Overcast	—.378	2	2	—	Overcast
	M.	19	—.139	4	4	—	Clearing	—.250	2	2	—	Ditto	—.418	0	0	—	Snow
	T.	20	—.850	0	0	—	Frosty	30.124	1.5	1.5	—	Fine	30.303	—3	—3	—	Frosty & Fine
☾	W.	21	30.389	—5	4	1	Sharp Frost	—.373	0.5	—3.5	4	Frosty	—.131	—0.5	—0.5	—	Snowing
	Th.	22	—.200	2	2	—	Thawing	—.241	3.5	3.5	—	Fine	—.366	0.5	0.5	—	Overcast
	F.	23	—.394	2	2	—	Hazy	—.364	4.5	4.5	—	Hazy	—.269	3.5	3.5	—	Ditto
	S.	24	—.158	8	8	—	Overcast	—.171	9.5	9.5	—	Fine	—.283	2	2	—	Ditto
	S.	25	—.250	8	8	—	Hazy	—.241	10	10	—	Hazy	—.459	5	5	—	Ditto
	M.	26	—.362	9	9	—	Overcast	—.359	11	9	2	Fine	—.459	5	5	—	Ditto
	T.	27	—.456	6	6	—	Hazy	—.444	8.5	7	1.5	Overcast	—.412	4	4	—	Ditto
●	W.	28	—.398	1.5	1.5	—	Ditto	—.340	7	7	—	Ditto	—.290	4.5	4.5	—	Ditto
	Th.	29	—.220	5	5	—	Ditto	—.168	9.5	9	0.5	Very Fine	—.149	6	6	—	Ditto
	F.	30	—.109	5	5	—	Ditto	—.086	10.5	7.5	3	Fine	—.049	5	5	—	Ditto
	S.	31	—.030	3	3	—	Ditto	—.052	5	4	1	Overcast	—.192	6	6	—	Ditto
	Cent.		30.097	2.88	2.63	0.25		30.107	5.62	4.49	1.13		30.123	3.22	3.13	0.09	
	Fah.			37.18	36.73	0.45			42.11	40.08	2.03			37.79	37.63	0.16	

JANUARY.

Days.	Temperature. Max.	Min.	Sun.	Rad.	Wind. Direction.	Force.	Rain. In.	Pts.	Remarks.
1	8	1.5	9.5	0	N	Little			In the last month of the preceding year, the quantity of rain scarcely amounted to ¾ of an inch, and rather less fell in this, although the wind was more from the South-west than from any other quarter. The barometer stood high throughout the first week, and very remarkably so on the morning of the 2nd. The weather during that time was generally hazy or densely foggy, and frosty at night. Between the 6th and 7th, the coldest night in the month, the thermometer fell to (—7.75) 13° Fah. below the freezing point. The second week was fine. The 16th was stormy, with rain, and some snow fell on the 19th and 21st. From this time till the end of the month, the weather was hazy but mild for the season. The average temperature was about 3° Fah. above the mean.
2	4.7	—1.25	5	— 4.5	SE	Ditto			
3	4.7	—4	5.5	— 8	E	Ditto			
4	2.5	—3.75	5	— 7.5	NE	Ditto			
5	6.5	—5.5	5.5	— 7	E	Ditto			
6	—0.5	—7.7	0	— 9	SW	Ditto			
7	—2	—6.5	0	— 7	SE	Ditto			
8	2	—2	+2.5	— 2.5	NE	Ditto			
9	9	1	9	— 0.5	SW	Brisk		.02	
10	9.5	5	10	4	W	Ditto			
11	10.5	8	11	6	——	Ditto			
12	11	3.5	13	0	SW	Little			
13	10	4	12	0.5	S	Ditto			
14	10.2	7	12	5	——	Ditto		.01	Mean Pressure from the 3 daily observations 30.109 inches. Fahr.
15	10	7	11.5	5.2	W	Ditto		.08	—— Temperature ..... Ditto ..... 3°.90 or 39.02
16	8.5	—0.5	9	— 4	——	Strong		.17	—— Dew Point ..... Ditto ..... 3°.41 — 38.14
17	5.7	—5.2	7.2	—10	——	Brisk			—— Degree of Dryness ... Ditto ..... 0.49 — 0.88
18	7	—1	7.5	— 1	SE	Little		.08	—— Degree of Moisture .. Ditto ..... .970
19	2.7	—6.2	4.5	— 9.5	NW	Ditto		.36	—— Force of Vapour .... Ditto ..... .265 inch.
20	3.5	—6.2	4.5	— 9.5	——	Ditto			Least observed degree of Moisture ..... .677
21	4.5	—2.5	7	— 3	W	Ditto			Maximum Temperature in the Shade .... 11°.5 or 52.70
22	4.5	—1	7.2	— 4.5	N	Ditto			Minimum Temperature in ditto ..... —7°.75 — 18.95
23	7	4	8	1	SW	Ditto			Maximum Temperature in the Sun ..... 15° — 59.00
24	10.5	2	12.2	0	——	Ditto			Minimum of Terrestrial Radiation ..... —9°.5 — 14.90
25	11	4	11	1.5	S	Ditto			Mean Temperature of external Air ..... 3°.74 — 39.73
26	11	3.7	14	1	SW	Ditto			
27	8.5	2.7	8.5	2	——	Ditto			
28	7.5	3.7	6.5	3	——	Ditto			
29	11.5	4	15	3.5	——	Ditto			
30	10.5	1	13.5	0.5	SE	Ditto			
31	9	3.2	10	3	SW	Ditto			
Cent	7.04	0.44	8.29	—1.65				0.72	
Fah.	44.67	32.79	46.92	29.03					

WINDS.

North	2 days.	N. East	2 days.
South	3 ..	S. East	4 ..
East	2 ..	N. West	2 ..
West	6 ..	S. West	10 ..

31 days.

Amount of Rain ..... 0.72 inch.

FEBRUARY.

		Morning.					Noon.					Night.				
1835.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	30.291	6.5	6.5	—	Hazy	30.289	11	11	—	Overcast	30.273	10.5	10.5	—	Overcast
M.	2	—.175	10	10	—	Cloudy	—.167	12.5	12	0.5	Cloudy & Mild	—.341	6.5	6.5	—	Ditto
T.	3	—.409	6	6	—	Fine	—.400	11	10	1	Overcast	—.430	8.5	8.5	—	Cloudy
W.	4	—.474	4.5	4.5	—	Ditto	—.484	11	8	3	Very Fine	—.531	3.5	3.5	—	Fine
☽ Th.	5	—.256	6	6	—	Ditto	—.109	11	10	1	Cloudy	—.091	5	5	—	Ditto
F.	6	—.208	2	1	1	Clear & Cold	—.276	6.5	2	4.5	Fine but Cold	—.321	5.5	5	0.5	Ditto
S.	7	—.089	8	8	—	Cloudy	—.000	10	10	—	Cloudy	29.725	6	6	—	Fine
S.	8	29.753	5	4	1	Clear	29.682	7.5	1.5	6	Fine	—.818	4	4	—	Overcast
M.	9	—.882	1	1	—	Ditto	—.980	5	1	4	Clear and Cold	—.888	2	2	—	Clear & Fine
T.	10	30.180	0	—4	4	Clear & Frosty	30.255	3.5	0	3.5	Fine but Cold	30.424	—2	—2	—	Ditto & Frosty
W.	11	—.485	1	1	—	Overcast	—.454	5	0.5	4.5	Overcast	—.329	6	6	—	Overcast
Th.	12	—.166	7	7	—	Rain	—.189	6	6	—	Rain	—.298	2	2	—	Fine
○ F.	13	—.380	2	2	—	Fine	—.369	9.5	9.5	—	Cloudy	—.151	6	6	—	Overcast
S.	14	—.069	5.5	5.5	—	Drizzly	—.000	10	10	—	Drizzly	29.876	10	10	—	Fine
S.	15	29.713	9	9	—	Hazy	29.624	11	11	—	Cloudy	—.503	6.5	6.5	—	Ditto
M.	16	—.560	5	4	1	Fine	—.593	9	4	5	Ditto	—.696	3	3	—	Ditto
T.	17	—.725	4	4	—	Slight Rain	—.746	9	7	2	Very Fine	—.709	2	2	—	Ditto
W.	18	—.507	6	6	—	Overcast	—.473	11	11	—	Rain	—.519	—0.5	—0.5	—	Clear
Th.	19	—.488	4	4	—	Clear	—.472	10	8	2	Cloudy	—.079	7	7	—	Stormy & Wet
☾ F.	20	—.299	4	4	—	Ditto	—.319	8	3.5	4.5	Fine	—.039	4.5	4.5	—	Rain
S.	21	—.324	3	3	—	Ditto	—.362	8	5	3	Ditto	—.624	1.5	1	0.5	Clear
S.	22	—.790	3.5	3	0.5	Ditto	—.760	8.5	4.5	4	Cloudy	—.301	10	10	—	Rain
M.	23	—.272	7	6	1	Boisterous	—.379	10	5	5	Boisterous	—.717	3	3	—	Fine
T.	24	—.808	3	1	2	Clear	—.847	7	1	6	Clear & Fine	—.914	2	2	—	Ditto
W.	25	—.639	7.5	7.5	—	Cloudy & Windy	—.488	10	10	—	Boisterous	—.380	7.5	7.5	—	Rain
Th.	26	— 302	6	6	—	Ditto	—.456	9.5	6	3.5	Ditto	—.326	5.5	5	0.5	Overcast
● F.	27	—.253	7	7	—	Stormy & Wet	—.194	8	8	—	Ditto	—.420	7	7	—	Rain
S.	28	—.668	4.5	4.5	—	Fine	—.833	8	5	3	Fine but Cold	—.700	1.5	1	0.5	Fine
Cent.		29.863	4.92	4.55	0.37		29.864	8.80	6.44	2.35		29.836	4.78	4.71	0.07	
Fah.			40.85	40.19	0.66			47.84	43.60	4.24			40.60	40.48	0.12	

FEBRUARY.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	12	8.5	12.5	8	SW	Little		In half the days of this month the wind was from the South-west. The quantity of rain exceeded the average, and amounted to more than an inch above what fell in the two preceding months taken together. The Temperature was also above the mean by several degrees. The sharpest frosts occurred about the 10th and 18th; but they were of short duration, and were succeeded in both cases by heavy rains, particularly on the 19th and 20th. The 23d was very boisterous, but without rain; the 24th was fine, and the three following days stormy and wet.
2	13.5	4.5	15	3	——	Brisk		
3	12	4	15	0.7	——	Little		
4	12	4	14.7	2.5	W	Ditto		
5	10	1.5	12	0	SW	Brisk		
6	9	4	9	2	NW	Ditto		
7	10	5	11.5	2	SW	Ditto		
8	8	1.5	11	—2	——	Ditto		
9	9.5	0	8	—3	W	Ditto		
10	5	4.5	8	—7	N	Ditto		
11	7.5	4	8.5	3	SW	Little	.18	
12	8.5	1	10	—1	N	Ditto	.28	
13	9.7	4.5	12	2.5	W	Ditto	.01	
14	11.5	5.7	12	4	SW	Ditto	.03	
15	12	4	14	1.5	W	Ditto		
16	10.2	1.2	13.5	—0.5	N	Brisk		
17	11.2	0.5	13.5	—3	NW	Little	.04	
18	11	—2.5	11.5	—7.2	SW	Ditto	.01	
19	10.2	3	13.5	0.5	——	Brisk	.50	
20	10	0.5	13	—2	W	Ditto	.51	
21	8.7	1	13.2	—2.5	——	Ditto	.01	
22	9.5	5	11.7	4	SW	Ditto	.29	
23	9.2	0.5	12.5	—3.5	W	Strong		
24	10	1.2	11.5	—2	——	Little		
25	10.5	6	10.5	5	SW	Strong	.24	
26	11	3.5	14	1	——	Ditto	.25	
27	10.5	1.5	14	—1.2	——	Ditto	.04	
28	8	—0.2	11	—4.5	NW	Brisk	.22	
Cent	10.01	2.46	12.0	0			2.61	
Fah.	18.01	36.42	53.6	32.				

Mean Pressure from the 3 daily observations	29.854	inches.	Fahr.
—— Temperature ..... Ditto	6°.16	or	43.08
—— Dew Point ..... Ditto	5°.23	—	41.41
—— Degree of Dryness .... Ditto	0°.93	—	1.67
—— Degree of Moisture .. Ditto	.927		
—— Force of Vapour .... Ditto	.293	inch.	
Least observed degree of Moisture	.680		
Maximum Temperature in the Shade	13°.5	or	56.30
Minimum Temperature in ditto	—4°.5	—	23.90
Maximum Temperature in the Sun	15°	—	59.0
Minimum of Terrestrial Radiation	—7°.25	—	18.95
Mean Temperature of External Air	6°.23	—	43.21

Winds.

North.....3 days.	N. East.....0 days
South.....0 ..	S. East.....0 ..
East.....0 ..	N. West.....4 ..
West .....7 ..	S. West.....14..

28 days.

Amount of Rain ..... 2.61 inches.

MARCH.

	1835.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	S.	1	29.312	1.5	1.5	—	Sleet	29.342	3.5	3.5	—	Rain	29.976	1.5	1.5	—	Overcast
	M.	2	30.178	0	0	—	Frosty&Foggy	30.174	5	5	—	Hazy	—.948	7	7	—	Ditto
	T.	3	29.723	8	8	—	Windy	29.821	7.5	4	3.5	Clear & Windy	—.990	3.5	3.5	—	Clear & Windy
	W.	4	—.882	4	3	1	Overcast	—.781	8	7	1	Bleak & Cold	—.718	2	2	—	Ditto
	Th.	5	30.052	1	0	1	Clear	30.054	8	0	8	Fine but Cold	—.696	6	6	—	Slight Rain
	F.	6	29.408	6.5	6.5	—	Showery	29.512	11	4	7	Boisterous	—.624	4	4	—	Overcast
D	S.	7	—.017	8	8	—	Fine	28.851	7	7	—	Showery	—.364	3.5	3.5	—	Stormy
	S.	8	—.680	3	2	1	Ditto	29.876	7	—1	8	Fine	—.601	5.5	5.5	—	Overcast
	M.	9	—.321	8.5	8.5	—	Slightly overcast	—.003	7	7	—	Heavy Rain	—.210	1	1	—	Fine
	T.	10	—.473	2	0	2	Very Clear	—.544	7	2	5	Fine	—.726	6	5	1	Ditto
	W.	11	—.571	8	8	—	Rain	—.583	11	11	—	Stormy & Wet	—.841	9	9	—	Ditto
	Th.	12	—.817	7	7	—	Ditto	—.741	13	13	—	Ditto	—.946	4	4	—	Ditto
	F.	13	30.156	2.5	2.5	—	Fine	30.229	10	10	—	Very Fine	30.209	4	4	—	Ditto
O	S.	14	—.019	7	7	—	Rain	—.016	13	13	—	Rain	—.101	8	8	—	Ditto
	S.	15	29.861	8	8	—	Ditto	29.911	8.5	8.5	—	Clearing	—.124	3.5	3.5	—	Ditto
	M.	16	30.106	7	6	1	Fine	30.102	10.5	6	4.5	Fine	—.075	5	4.5	0.5	Ditto
	T.	17	29.950	7	7	—	Overcast	29.790	11	10	1	Ditto	29.806	7	7	—	Overcast
	W.	18	—.942	5	5	—	Rain	30.018	8.5	8	0.5	Clearing	30.177	3	3	—	Fine
	Th.	19	30.294	3.2	3.2	—	Hazy	—.289	5.5	5.5	—	Fine	—.340	5	5	—	Clear
	F.	20	—.366	4	4	—	Slight Haze	—.349	12.5	7	5.5	Ditto	—.327	8	8	—	Overcast
☾	S.	21	—.275	8	8	—	Ditto	—.254	12	12	—	Rain	—.250	7.5	7.5	—	Ditto
	S.	22	—.292	7.5	7.5	—	Ditto	—.296	9	9	—	Cloudy	—.325	2	2	—	Clear and Fine
	M.	23	—.305	5.5	5.5	—	Cold Haze	—.269	9	3	6	Do. and Cold	—.297	5	4.5	0.5	Overcast
	T.	24	—.347	6	6	—	Cloudy	—.376	8	2	6	Fine but Cold	—.484	1	0	1	Fine
	W.	25	—.575	2	1	1	Clear & Cold	—.606	9	1.5	7.5	Fine	—.575	0	—1	1	Ditto
	Th.	26	—.516	0.5	0.5	—	Frosty&Foggy	—.436	9.5	6	3.5	Ditto	—.373	2	2	—	Frosty Haze
	F.	27	—.371	4	4	—	Hazy	—.343	11	8	3	Overcast	—.316	6	6	—	Overcast
	S.	28	—.256	5.5	2.5	3	Overcast & Cold	—.202	7	2	5	Bleak & Cold	—.161	1	0	1	Do. and Cold
●	S.	29	—.172	5	2.5	2.5	Slight Haze	—.101	9	4	5	Dry Haze	—.056	0	0	—	Clear & Frosty
	M.	30	29.914	1	1	—	Frosty	29.838	12.5	7	5.5	Fine	29.828	—5	—5	—	Ditto
	T.	31	—.831	4.5	4.5	—	Do. & Foggy	—.820	12.5	12.5	—	Rain	30.832	11.5	11.5	—	Overcast
	Cent.		29.967	4.86	4.46	0.40		29.952	9.13	6.37	2.76		30.009	4.11	3.95	0.16	
	Fah.			40.74	40.02	0.72			48.43	43.46	4.97			39.39	39.11	0.28	

MARCH.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	4	—1.2	10.7	—3	SW	Little	.15	This month, in general, maintained its usual rough character, particularly through the day, the piercing winds often abating towards night. The temperature was below the average; and the latter half was colder than the first, being, with few exceptions, more or less frosty at night, with prevalent north-east winds. The dryness of the air was less than usual at this season, as was also the direct power of the solar rays. As might be expected, from the want of heat, vegetation made little progress; and, indeed, the records of experience shew that, generally, at this period, and in this climate, the less the better. Sleet fell on the 1st; the 6th was very boisterous. The coldest nights were as far in the month as the 25th and 29th.
2	9	4	11	3	——	Ditto		
3	8	1	11	—1.5	W	Strong		
4	9.5	1.5	11	—1	——	Brisk		
5	11	4.5	12.7	3.5	——	Ditto	.08	
6	10	3.5	12.5	1	——	Strong	.17	
7	8	1.2	12	—1	SW	Brisk	.09	
8	9	2.7	10	0.5	W	Little		
9	10.5	0.2	12	—3	SE	Ditto	.18	
10	10.7	3.5	12	—0.2	W	Ditto	.05	
11	12	3	12.5	1	SW	Strong	.16	
12	12.5	—0.2	12.5	—2.5	——	Ditto	.22	
13	13.5	0	16.5	0	——	Little	.18	
14	15.5	6	18	5.5	——	Ditto	.32	
15	10.5	2.5	12	0	N	Ditto	.06	
16	10.5	4.5	14.5	3	NW	Brisk		
17	10	4	12	1.5	W	Ditto	.21	
18	10.5	—1.2	14	—5	NE	Ditto		
19	12	—2	14	—6	NW	Little		
20	12.5	7	15	7	SW	Ditto		
21	12	6	12.5	5	——	Ditto	.08	
22	9	1.7	9.5	0	NE	Ditto		
23	10	3.5	11.5	2	——	Ditto	.01	
24	9	0	14	—3	——	Brisk		
25	10.2	—3	15	—7.5	——	Ditto		
26	12.5	—2	16.5	—5	W	Little		
27	11	3	12	1.5	NE	Ditto		
28	8.5	0.5	12	—2	——	Ditto		
29	8.5	—3.2	11	—6	E	Ditto		
30	13.5	—2	18	—5.5	S	Ditto		
31	17.5	8.5	20.5	6.5	SW	Brisk	.01	
Cent	10.67	1.85	13.17	—0.36			1.97	
Fah.	50.12	35.33	55.70	31.36				

Mean Pressure from the 3 daily observations 29.976 inches. Fahr.

—— Temperature	Ditto	6°.03	or	42.85
—— Dew Point	Ditto	4°.93	—	40.87
—— Degree of Dryness ...	Ditto	1°.10	—	1.98
—— Degree of Moisture ..	Ditto	.923		
—— Force of Vapour	Ditto	.290 inch.		
Least observed degree of Moisture		.600		
Maximum Temperature in the Shade		17°.5	or	63.50
Minimum Temperature in ditto		— 3°.75	—	25.25
Maximum Temperature in the Sun		20°.5	—	68.90
Minimum of Terrestrial Radiation		— 7°.5	—	18.5
Mean Temperature of External Air		6°.26	—	43.26

WINDS.

North.....	1 days.	N. East.....	7 days.
South	1 ..	S. East.....	1 ..
East	1 ..	N. West.....	2 ..
West.....	8 ..	S. West	10..

31 days.

Amount of Rain..... 1.97 inch.

APRIL.

1835.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
W.	1	29.979	12.5	12.5	—	Cloudy & Fine	30.029	13	4	9	Fine	29.959	11.5	11.5	—	Fine
Th.	2	—.797	10	10	—	Fine	29.836	20	15	5	Very Fine	—.755	13	13	—	Ditto
F.	3	—.803	13	13	—	Overcast & Do.	—.890	17	15	2	Cloudy & Fine	—.936	10	10	—	Ditto
S.	4	30.115	9	9	—	Slight Drizzle	30.152	15	12	3	Fine	30.184	9	9	—	Slight Rain
S.	5	—.235	10	10	—	Rain	—.249	11.5	11.5	—	Hazy	—.364	6.5	6.5	—	Fine
☽ M.	6	—.383	10	10	—	Fine	—.384	15	11	4	Overcast	—.414	6	6	—	Ditto
T.	7	—.431	8	8	—	Very Fine	—.386	16	11	5	Very Fine	—.367	5	5	—	Ditto
W.	8	—.351	11	11	—	Ditto	—.304	18.5	13	5.5	Ditto	—.281	11	11	—	Ditto
Th.	9	—.217	15	13	2	Ditto	—.192	17	13	4	Ditto	—.138	12	12	—	Ditto
F.	10	—.183	12.5	12	0.5	Cloudy	—.213	15	11	4	Ditto	—.308	6	6	—	Ditto
S.	11	—.363	10	6	4	Fine	—.389	12	1	11	Cold and Dry	—.380	1	0	1	Ditto
S.	12	—.341	5.5	4	1.5	Ditto	—.299	13	1	12	Very Fine	—.218	5	5	—	Cloudy
○ M.	13	—.238	8	7	1	Ditto	—.183	15.5	7	8.5	Ditto	—.183	10.5	9.5	1	Fine
T.	14	—.143	9	7	2	Ditto	—.096	17	0	17	Ditto	—.037	5	3	2	Very Cold
W.	15	29.960	7	6	1	Ditto	29.906	15.5	8	7.5	Ditto	—.116	2	1	1	Ditto
Th.	16	30.231	2.5	—1	3.5	Clear & Cold	30.202	7.5	—6	13.5	Cold & Dry	—.195	—1	—1	0	Clear
F.	17	—.218	1.5	1.5	—	Do. Bright Sun	—.215	4	4	—	Snow Showrs	—.229	0	0	—	Ditto
S.	18	—.139	4	3	1	Ditto	—.051	10	10	—	Cloudy	—.114	6.5	6.5	—	Overcast
☾ S.	19	—.326	8	2	6	Fine	—.378	12	5	7	Fine	—.446	7.5	7.5	—	Ditto
M.	20	—.499	10.5	9	1.5	Overcast	—.493	15	9	6	Ditto	—.495	10.5	10.5	—	Ditto
T.	21	—.475	11	9	2	Ditto and Fine	—.457	19	6	13	Cloudy	—.441	5	4	1	Fine
W.	22	—.448	11.5	11.5	—	Mild Rain	—.441	14	6	8	Fine	—.460	10	10	—	Overcast
Th.	23	—.486	11.5	6	5.5	Fine	—.430	11.5	9	2.5	Overcast	—.411	9.5	9.5	—	Fine
F.	24	—.395	12	12	—	Overcast & Do.	—.356	15	12	3	Slight Haze	—.255	10	10	—	Ditto
S.	25	—.173	10	5	5	Clear	—.086	12.5	0	12.5	Cloudy	29.859	5	5	—	Overcast
S.	26	29.746	6.5	1	5.5	Fine but Cold	29.707	12	—2	14	Cold and Dry	—.672	0	0	—	Fine
● M.	27	—.650	2	2	—	Frosty	—.657	10	—4	14	Fine	—.686	1.5	1.5	—	Ditto
T.	28	—.844	6.5	3	3.5	Clear	—.847	12	0	12	Ditto	—.847	4.5	4	0.5	Ditto
W.	29	—.720	5.5	5.5	—	Cold Rain	—.660	6.5	6.5	—	Cold Rain	—.583	7	7	—	Rain
Th.	30	—.558	8	8	—	Rain	—.576	10.5	10.5	—	Heavy Rain	—.616	7	7	—	Overcast
Cent.		30.148	8.78	7.20	1.58		30.135	13.41	6.65	6.76		30.131	6.55	6.33	0.21	
Fah.			47.67	44.96	1.48			56.13	43.97	12.16			43.79	43.40	0.59	

APRIL.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	21	4	25.5	0.5	SW	Little			The first 10 days were warm, and vegetation, previously retarded, burst forth rapidly at this advanced period of the season, under a temperature of between 60° and 70° through the day, and no frost at night. Pears and Plums bore a most abundant blossom; but when in full expansion, the nights became frosty, but dry, till the 16th; and although the most exposed suffered, still the lower and interiorly situated blossoms were tolerably safe. The day last mentioned was clear and cold, with much dryness in the air, till sleet and rain fell in the afternoon; vegetation was completely steeped with moisture, and the cold of the following morning was so pervading, that wherever moisture existed, it was converted into icicles—the cups of flowers contained solid buttons of ice. Flying showers of snow, and some hail, fell through the day. Cold and heavy rain occurred on the 29th.
2	23	10.2	27.5	8.2	S	Ditto			
3	20	7	24	5	SW	Ditto			
4	18	6	20	4	E	Ditto		.04	
5	15	4	17	1	NE	Ditto		.02	
6	15.7	5	19	2	SW	Ditto			
7	20	1	25	—0.5	W	Ditto			
8	20.5	6	24	3	——	Ditto			
9	17	11	20.7	9.7	——	Brisk			
10	16	3.7	19.5	2	——	Ditto			
11	12	—2.7	18	—5	NE	Ditto			
12	17	1.5	21.5	—2	SW	Ditto			
13	19.5	—1.7	23.5	—2.5	——	Little			
14	19	0	20	—4	——	Ditto			
15	17	0	22.5	—3	N	Ditto			
16	10	—2.5	13.5	—6.5	——	Brisk		.03	
17	10	—1.5	13.5	—6	——	Ditto		.01	
18	10.7	1.5	15.5	—1	W	Little			
19	14.5	5	18.5	4.5	N	Ditto			
20	15.7	5	20	1.5	NW	Ditto			
21	15.2	3	20	—1	W	Ditto		.04	
22	17.2	5	21	1	N	Ditto			
23	13	8	15	5	——	Ditto		.01	
24	15.5	6.2	19	4	——	Ditto			
25	13.7	3	17	0.7	NW	Brisk			
26	11.7	—3.5	17.5	—6.5	——	Ditto			
27	10.5	—2.5	16.5	—7	N	Little			
28	12.5	3.7	18	1.5	NE	Ditto		.04	
29	8	6.5	10	6	——	Strong		.75	
30	10.7	6	11.5	5	SW	Little		.12	
Cent	15.33	2.92	19.13	0.65				1.07	
Fah.	59.59	17.25	66.43	1.17					

Mean Pressure from the 3 daily observations 30.138 inches. Fahr.

—— Temperature	Ditto	9°.58	or	49.24
—— Dew Point	Ditto	6°.73	—	44.11
—— Degree of Dryness ...	Ditto	2°.85	—	5.13
—— Degree of Moisture ..	Ditto	.843		
—— Force of Vapour.	Ditto	.329 inch.		
Least observed degree of Moisture		.356		
Maximum Temperature in the Shade.....		23°.	or	73.4
Minimum Temperature in ditto		— 3°.5	—	25.7
Maximum Temperature in the Sun		27°.5	—	81.5
Minimum of Terrestrial Radiation		— 7°.	—	19.4
Mean Temperature of External Air.....		9°.12	—	48.41

WINDS.

North.....8 days.		N. East.....4 days.	
South.....1	..	S. East.....0	..
East.....1	..	N. West.....3	..
West.....6	..	S. West.....7	..

30 days.

Amount of Rain..... 1.07 inch.

MAY.

	1835.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	F.	1	29.658	8	8	—	Rain	29.673	10	9.5	0.5	Hazy	29.662	5	5	—	Fine
	S.	2	—.656	10	10	—	Slight Haze	—.632	13.5	13.5		Heavy Showers	—.669	5.5	5.5	—	Ditto
	S.	3	—.776	10	9	1	Fine	—.818	13	6	7	Cloudy	—.850	8.5	8.5	—	Cloudy
	M.	4	—.890	10.5	10.5	—	Ditto	—.904	13	13	—	Ditto	30.044	8	8	—	Do. and Fine
☽	T.	5	30.113	11	9	2	Ditto	30.075	17	9	8	Very Fine	29.987	10	10	—	Fine
	W.	6	29.886	11.5	11.5	—	Rain	29.832	17	13	4	Fine	—.875	9	9	—	Very Fine
	Th.	7	—.952	12.5	10	2.5	Cloudy	—.991	16.5	11	5.5	Overcast & Do.	30.091	7	7	—	Ditto
	F.	8	30.136	11	11	—	Hazy	30.078	17	17	—	Slight Rain	—.059	13	13	—	Ditto
	S.	9	—.010	14	14	—	Fine	29.944	22	15	7	Fine	29.835	11	11	—	Ditto
	S.	10	29.795	14	12	2	Ditto	—.784	20	11.5	8.5	Ditto	—.881	8.5	8.5	—	Ditto
	M.	11	—.974	13	10	3	Ditto	—.964	17.5	9	8.5	Ditto	—.843	14	14	—	Slight Rain
○	T.	12	—.841	12	12	—	Overcast	—.788	17	9	8	Overcast	—.646	12	12	—	Ditto
	W.	13	—.577	13.5	13.5	—	Cloudy	—.616	18	8	10	Fine	—.487	9	9	—	Rain
	Th.	14	—.495	7.5	7.5	—	Rain	—.539	10	10	—	Rain	—.642	8	8	—	Ditto
	F.	15	—.712	12.5	12.5	—	Fine	—.729	15.5	15.5	—	Heavy Showers	—.747	11	11	—	Cloudy
	S.	16	—.768	12.5	12.5	—	Ditto	—.809	16	12	4	Fine	—.827	8	8	—	Fine
	S.	17	30.037	15	12	3	Ditto	—.950	20	14	6	Ditto	—.972	9	9	—	Ditto
	M.	18	29.906	17	14	3	Ditto	—.877	24.5	14.5	10	Very Fine	—.886	11	11	—	Ditto
☾	T.	19	—.865	18	14	4	Ditto	—.806	23.5	12	11.5	Ditto	—.876	10	10	—	Ditto
	W.	20	—.935	14	13	1	Hazy	30.020	16	15	1	Hazy	30.112	12	12	—	Overcast
	Th.	21	30.196	12	12	—	Fine	—.180	17	7	10	Fine	—.191	8	8	—	Fine but Cold
	F.	22	—.171	14	10	4	Ditto	—.123	20	12	8	Ditto	—.088	13.5	13.5	—	Rain
	S.	23	—.116	14	14	—	Ditto	—.114	20.5	11	9.5	Ditto	—.111	13.5	13.5	—	Overcast
	S.	24	—.127	17	14	3	Very Fine	—.121	20	12	8	Very Fine	29.961	13.5	13.5	—	Fine
	M.	25	29.885	15	13	2	Overcast	29.807	18.5	8	10.5	Fine	—.642	10	10	—	Ditto
	T.	26	—.546	13.5	12	1.5	Ditto	—.493	15.5	15.5	—	Rain	—.506	9	9	—	Ditto
●	W.	27	—.682	12.5	12.5	—	Ditto	—.736	15	10	5	Cloudy&Fine	—.891	7.5	7.5	—	Overcast
	Th.	28	—.952	11	11	—	Hazy	29.963	15	15	—	Showery	30.023	6	6	—	Fine
	F.	29	30.057	11	8	3	Fine but Cool	30.066	15.5	9	6.5	Fine	—.138	6	6	—	Cold
	S.	30	—.104	13	5	8	Ditto	—.082	15.5	6	9.5	Cloudy & Cold	—.090	7	7	—	Ditto
	S.	31	—.046	12	6	6	Clear	29.967	15	15	—	Cloudy	29.941	9	9	—	Fine
	Cent.		29.902	12.66	11.08	1.58		29.886	16.92	11.54	5.37		29.892	9.43	9.43	0	
	Fah.			54.78	51.94	3.24			62.45	52.78	89.67			48.97	48.97	0	

MAY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	14	2.5	18	—1	SW	Little	.05	
2	12	4	15.2	1	W	Ditto	.08	
3	13.7	4.2	16.7	1.5	SW	Ditto		
4	16	3.5	21.5	1	N	Ditto		
5	18	8.5	23	6.5	S	Ditto	.12	
6	18.2	5.5	21.5	3.5	SW	Ditto		
7	17	3	21	1.5	W	Ditto		
8	21	11	25	9	S	Ditto		
9	21.5	9	26	6.5	SW	Brisk		
10	19	5	26	4	——	Ditto		
11	17.5	10	22	9	——	Ditto		
12	17.5	8	21	9	W	Ditto	.20	
13	18	6.5	22	6.5	SW	Little	1.10	
14	15	6.7	19	6	NE	Ditto	.66	
15	16.5	5.5	23	2	S	Ditto	.06	
16	18	5.5	23	2.5	SW	Ditto	.04	
17	23.5	4	29	0.7	——	Brisk		
18	24.7	8	31	6	S	Little		
19	22	8.5	29	7.5	E	Ditto		
20	16	9	18	8	——	Ditto	.03	
21	17.5	3	21	0	N	Ditto		
22	22	9	27	7.5	W	Ditto	.06	
23	22.2	11	26.2	9	——	Ditto		
24	23	12	28	10	——	Ditto		
25	19	7.5	24	5	——	Brisk	.02	
26	15.2	4.5	24	2	——	Little	.22	
27	18.2	3.7	24	1.5	——	Ditto	.44	
28	17.5	4	23.5	2	E	Brisk	.04	
29	15.7	3	21.5	—0.2	——	Little		
30	15.5	2.7	20	1	N	Brisk		
31	19	7.5	24	6	NW	Little	.26	
Cent	18.20	6.32	23.04	4.32			3.38	
Fah.	64.76	43.38	73.47	39.77				

The temperature of this month was about the average; but it was some time before vegetation began to recover from the paralyzing severity of the preceding month, and many flowering shrubs, particularly American, did not exhibit their usual splendour. Much rain fell between the 12th and 16th; on the 13th alone, there was more than an inch. Altogether, the amount was about an inch and a half above the average. Heavy showers, with thunder, occurred on the afternoon of the 26th.

Mean Pressure from the 3 daily observations	29.893	inches	Fahr.
—— Temperature .....Ditto.....	13°.00	or	55.4
—— Dew Point .....Ditto.....	10°.69	—	51.24
—— Degree of Dryness ....Ditto.....	2°.31	—	4.16
—— Degree of Moisture ...Ditto.....	.865		
—— Force of Vapour .....Ditto.....	.417	inch.	
Least observed degree of Moisture	.511		
Maximum Temperature in the Shade	24°.75	or	76.55
Minimum Temperature in ditto.....	2°.5	—	36.5
Maximum Temperature in the Sun	31°.0	—	87.8
Minimum of Terrestrial Radiation	— 1°.0	—	30.2
Mean Temperature of External Air	12°.26	—	54.06

WINDS.

North.....	3 days.	N. East	1 days.
South.....	4 ..	S. East	0 ..
East	4 ..	N. West	1 ..
West.....	9 ..	S. West	9 ..

31 days.

Amount of Rain .....3.38 inches.

JUNE.

		Morning.					Noon.					Night.				
1835.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
M.	1	29.914	12	12	—	Rain	29.940	13	13	—	Cloudy	30.050	9	9	—	Fine
T.	2	30.030	16	14	2	Very Fine	30.029	21.5	14	7.5	Very Fine	29.990	13.5	13.5	—	Overcast
W.	3	29.899	14.5	14.5	—	Hazy	29.899	21	18	3	Sultry	—.926	13	13	—	Fine
☽ Th.	4	—.984	18	15	3	Fine	30.006	18	16	2	Overcast	30.051	13.5	13.5	—	Cloudy & Do.
F.	5	30.087	13	13	—	Hazy	—.090	16	14	2	Light Haze	—.105	12	12	—	Hazy
S.	6	—.074	17	14	3	Fine	—.090	27	22	5	Fine	—.100	15	15	—	Fine
S.	7	—.139	20	12	8	Very Fine	—.097	28	20	8	Sultry	—.100	15	14	1	Ditto
M.	8	—.108	21	20	1	Ditto	—.081	28.5	20	8.5	Very Hot	—.154	16	15.5	0.5	Ditto
T.	9	—.196	22	20	2	Ditto	—.195	27	22	5	Ditto	—.261	18	18	—	Ditto
○ W.	10	—.280	22	16	6	Ditto	—.301	28.5	14	14.5	Ditto	—.326	17	16	1	Ditto
Th.	11	—.336	24	21	3	Ditto	—.330	29.5	14	15.5	Ditto	—.359	18	17	1	Ditto
F.	12	—.375	22	17	5	Ditto	—.350	27	22	5	Ditto	—.349	16.5	16.5	—	Ditto
S.	13	—.337	14.5	14	0.5	Overcast	—.315	22	16	6	Very Fine	—.278	15	15	—	Ditto
S.	14	—.242	17	15	2	Fine	—.217	22.5	10	12.5	Ditto	—.196	15	15	—	Ditto
M.	15	—.206	20.5	17	3.5	Ditto	—.214	25.5	15	10.5	Ditto	—.234	16	16	—	Ditto
T.	16	—.264	20	14	6	Ditto	—.226	25.5	15	10.5	Ditto	—.152	19	18	1	Ditto
W.	17	—.121	23	18	5	Cloudy	—.105	25.5	16	9.5	Ditto	—.061	18	17	1	Cloudy, lightning
☾ Th.	18	—.089	16	13	3	Fine	—.067	21	13	8	Ditto	—.139	11.5	11.5	—	Fine
F.	19	—.162	15	8	7	Ditto	—.166	20.5	8	12.5	Ditto	—.031	15	14	1	Ditto
S.	20	29.999	16	13	3	Cloudy	29.960	21	16	5	Do. & Cloudy	—.001	14	14	—	Ditto
S.	21	30.046	17	12	5	Fine	—.972	24	15	9	Fine	29.937	15	15	—	Ditto
M.	22	29.843	19	16	3	Cloudy	—.767	24	17	7	Ditto	—.705	16	16	—	Overcast
T.	23	—.658	15	15	—	Do. and Fine	—.697	19	10	9	Ditto	—.765	10	10	—	Fine
W.	24	—.567	14.5	14.5	—	Rain	—.253	12	12	—	Cold Rain	—.343	12	12	—	Stormy
Th.	25	—.435	12	8	4	Cold & windy	—.500	9.5	9.5	—	Heavy Rain	—.426	11	11	—	Fine
● F.	26	—.893	12.5	9	3.5	Clear	—.536	12	12	—	Ditto	—.663	6	6	—	Rain
S.	27	—.989	11	8	3	Fine but Cool	30.071	15.5	8	7.5	Fine	30.236	9	9	—	Overcast
S.	28	—.259	14	10	4	Fine	—.233	19	16	3	Cloudy	—.253	9.5	9.5	—	Ditto
M.	29	30.239	12	12	—	Cold Dew	—.198	18	9	9	Fine	—.172	12	12	—	Fine
T.	30	—.144	16	10	6	Fine	—.121	20.5	10	10.5	Ditto	—.112	12	12	—	Ditto
Cent.		03.063	16.88	13.83	3.05		30.034	21.40	14.58	6.81		30.049	13.75	13.53	0.21	
Fah.			62.38	56.89	5.49			70.50	52.24	12.25			56.75	56.36	.38	

JUNE.

Temperature.					Wind.		Rain.		Remarks
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	17	5·5	20.7	2·5	S	Little		.02	The weather for the first three weeks was very fine; and from the 7th to the 13th, sultry and hot. From the 6th to the 12th, the thermometer in the shade reached from 80° to 87° Fah. The mean temperature was above the average, although in the last week the temperature was rather low through the day, and the nights cold. Vegetation was in want of rain, when a copious supply was obtained after the 22nd. An inch fell on the 26th; and altogether an average amount was made up. Lightning, with slight rain, occurred on the evening of the 17th.
2	21.7	10	28	9·7	——	Ditto		.17	
3	23·5	10.5	28.5	8.5	——	Ditto			
4	17·5	9·2	28	7	NE	Ditto			
5	17	10.7	24	10.5	——	Ditto			
6	27	11	32·5	9·5	——	Brisk			
7	28	11.5	32	10	SE	Little			
8	29.5	11	32	10	S	Ditto			
9	29.5	10	34·5	8.5	W	Ditto			
10	30.5	11.7	36	6.5	SE	Ditto			
11	29.5	10.7	35	9	——	Ditto			
12	28	12	34	10	NE	Ditto			
13	21.5	8.5	33	6	N	Ditto			
14	24	10.5	38	9	——	Ditto			
15	26	10.7	39	8.5	——	Ditto			
16	25.5	15·5	39	15	——	Ditto			
17	25	11·5	39	12	——	Ditto		.01	
18	25.5	7·2	39	4·5	——	Ditto			
19	19.5	11.5	39	10	W	Ditto			
20	20	12	30	11	——	Ditto			
21	24	12	31	11	——	Brisk			
22	24	10	33	9	SW	Ditto		.30	
23	18.5	5·5	27	3	——	Little		.02	
24	16.7	6.5	19	5	——	Strong		.26	
25	12.5	3	17	2.5	NW	Brisk		.20	
26	15.5	6	24	5	SW	Little		1.00	
27	16.2	5	26	2.5	W	Ditto		.01	
28	20.5	4·5	34	1·5	NW	Ditto			
29	21.5	5·2	36.5	2.5	N	Ditto			
30	24.5	7·5	39	5	S	Ditto			
								1.99	
	22.99	9.22	31.59	7·49					
	73.38	48.59	88.86	45·48					

Mean Pressure from the 3 daily observations 30.048 inches.

—— Temperature	Ditto	17°.34	or	Fahr. 63.21
—— Dew Point	Ditto	13°.98	—	57.17
—— Degree of Dryness ...	Ditto	3°.35	—	6.04
—— Degree of Moisture ..	Ditto	.822		
—— Force of Vapour	Ditto	.510	inch.	
Least observed degree of Moisture		.411		
Maximum Temperature in the Shade.....		30°.5	or	86.9
Minimum Temperature in ditto		3°.0	—	37·4
Maximum Temperature in the Sun		39°.	—	102.2
Minimum of Terrestrial Radiation		1°.5	—	34 7
Mean Temperature of External Air		16°.10	—	60.98

WINDS.

North	7 days	N. East	4 days
South	5 ..	S. East	3 ..
East	0 ..	N. West	2 ..
West	5 ..	S. West	4 ..

30 days.

Amount of Rain..... 1.99 inch.

JULY.

		Morning.					Noon.					Night.				
1835.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	30.099	18.5	16	2.5	Fine [der	30.074	24.5	13	11.5	Fine	30.073	12.5	11	1.5	Fine
Th.	2	—.033	22	16	6	Sultry, Thun-	—.042	26	20	6	Sultry	—.087	17	17	—	Ditto
☽ F.	3	—.081	18.5	16.5	2	Very Fine	—.069	24	14	10	Very Fine	—.092	15	14	1	Ditto
S.	4	—.098	18	17	1	Ditto	—.050	24	14	10	Ditto	29.974	14	14	—	Ditto
S.	5	29.841	18	18	—	Cloudy	29.930	23.5	23.5	—	Showers	—.897	13	13	—	Ditto
M.	6	—.938	18	14	4	Fine	30.067	22.5	13	9.5	Fine	30.164	12	11.5	0.5	Ditto
T.	7	30.168	18	12	6	Ditto	—.136	22.5	12	10.5	Ditto [cast	—.045	13	12.5	0 5	Ditto
W.	8	29.981	17.5	15	2.5	Ditto	—.010	22	13	9	Ditto & over-	—.057	12.5	12.5	—	Ditto
Th.	9	30.015	16	15	1	Overcast	29.934	22	15	7	Ditto	29.744	15	15	—	Ditto
○ F.	10	29.794	17	15	2	Fine	—.859	21	9	12	Fine	—.964	12	11	1	Ditto
S.	11	30.069	16	13	3	Ditto	30.101	20.5	12	8.5	Ditto	30.087	11.5	11.5	—	Cloudy & Do.
S.	12	—.006	18	13	5	Ditto	29.965	23	15	8	Ditto	29.833	16	16	—	Fine
M.	13	29.853	18	15	3	Ditto	—.855	22	12	10	Ditto	30.007	13	13	—	Ditto
T.	14	30.046	16	12	4	Ditto	30.057	22	12	10	Ditto	—.022	13	12	1	Ditto
W.	15	29.917	21	17	4	Ditto	29.900	23.5	14	9.5	Ditto	29.856	16.5	15.5	1	Ditto
Th.	16	—.924	18	15	3	Ditto	—.938	23	14	9	Very Fine	—.997	16	14	1	Ditto
☾ F.	17	30.043	19	14	5	Very Fine	30.035	25	16	9	Ditto	30.057	15	14	1	Ditto
S.	18	29.999	21.5	17	4.5	Overcast	29.946	27	17	10	Very Hot	—.027	16	15	1	Ditto
S.	19	30.144	20	14	6	Very Fine	30.157	24.5	12	12.5	Very Fine	—.150	15	14.5	0.5	Ditto
M.	20	—.168	20.5	17	3.5	Ditto	—.148	28.5	18	10.5	Very Hot	—.172	21	20	1	Cloudy
T.	21	—.186	22.5	20	2.5	Ditto	—.184	27.5	10	17.5	Ditto	—.209	17	15	2	Fine
W.	22	—.209	21	17	4	Ditto	—.216	25.5	15	10.5	Ditto	—.249	15	14	1	Ditto
Th.	23	—.275	18.5	17	1.5	Overcast	—.230	26	22	4	Ditto	—.236	15.5	15	0.5	Ditto
F.	24	—.202	20	16	4	Fine	—.165	26	14	12	Do. and Dry	—.176	16	16	—	Ditto
● S.	25	—.158	21	17	4	Ditto	—.148	25.5	12	13.5	Ditto	—.136	16	15	1	Ditto
S.	26	—.160	21	16	5	Ditto	—.135	25.5	12	13.5	Do. & Clear	—.086	14	13	1	Ditto
M.	27	—.057	20	18	2	Ditto	—.035	27	10	17	Ditto	—.031	16	14	2	Ditto
T.	28	—.052	22	19	3	Very Hot	—.054	30	16	14	Sultry	—.124	15	14	1	Ditto
W.	29	—.210	18	17	1	Very Fine	—.194	26	16	10	Ditto [Dry	—.178	16	15.5	0.5	Ditto
Th.	30	—.180	18.5	10	8.5	Hot and Dry	—.126	27	12	15	Clear, Hot, &	—.069	16	14	2	Ditto
F.	31	—.105	18.5	15	3.5	Ditto	—.097	23	12	11	Hot and Dry	—.128	14	13	1	Ditto
Cent.		30.061	19.04	15.61	3.43		30.060	24.51	14.17	10.34		30.062	14.79	14.04	0.74	
Fah.			66.27	60.09	6.17			76.11	57.50	18.61			58.62	57.27	1.33	

JULY.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	25	11	40	9.7	S	Little		This month was very hot and dry. No rain fell after the 15th, and previously not half an inch, being scarcely $\frac{1}{15}$ of the quantity which fell in the corresponding month of the preceding year. The unusually large amount, 6.34 inches, in 1834, was not felt by vegetation as a superabundance; for extremely little rain had fallen for months before. Happily such dryness was not the case with the months preceding the present, otherwise a great deficiency in the corn and hay crops must have been the consequence. On the contrary, these crops derived moisture from the abundant depositions in May and June, sufficient to supply them till they reached, very generally, a perfect maturity. The temperature was more than 3° above the average. The highest in the shade was on the 28th being then nearly 91° Fah. Vegetation was most evidently observed to droop after the 21st, being then subjected to the influence of parching easterly winds.
2	27	11	41.5	9.5	——	Ditto		
3	26	11	39	9.5	SW	Ditto		
4	25.5	11	36.5	9	W	Ditto	.24	
5	22.5	11	31	9	——	Brisk	.01	
6	23	7	35	4.5	SW	Little		
7	22.5	11	31	9.5	——	Ditto	.10	
8	21	7.5	28	7	——	Ditto		
9	19.5	12.5	25	10.5	S	Brisk		
10	21.5	9	30	6.5	SW	Ditto		
11	22.5	9.7	32.5	6.5	W	Little		
12	23.5	12	33	11	SW	Brisk	.02	
13	21.7	9	30	7.5	——	Ditto	.02	
14	22	6	32	5	W	Little		
15	23.5	13	31.5	11.5	S	Ditto	.02	
16	25.5	8.7	38.5	6.5	W	Ditto		
17	28	9.5	41	8	SW	Brisk		
18	28	9.5	39.5	7.5	S	Little		
19	26.5	8	36	6	——	Ditto		
20	29	12.2	45.5	10.5	SW	Ditto		
21	29	13	44.5	11.5	E	Ditto		
22	25	15	39	12.5	——	Brisk		
23	26	10.7	42.5	10	——	Little		
24	28	12	44.5	10	——	Brisk		
25	26.7	12	41.2	10	——	Ditto		
26	26.5	11.5	41.5	10.5	SE	Ditto		
27	29.5	10.2	45	9	E	Ditto		
28	32.7	12	47	10	SW	Little		
29	29.5	9	44.5	7.5	——	Ditto		
30	31	10	45.5	8	N	Ditto		
31	25.5	7.5	42	5.5	NE	Ditto		
Cent	25.59	10.41	37.85	8.68			.41	
Fah.	78.06	50.06	100.13	47.62				

Mean Pressure from the 3 daily observations 30.061 inches. Fahr.

—— Temperature .....Ditto.....	19°.44	or	66.99
—— Dew Point .....Ditto.....	14°.61	—	58.29
—— Degree of Dryness ....Ditto.....	4°.83	—	8.70
—— Degree of Moisture....Ditto.....	.706		
—— Force of Vapour.....Ditto.....	.493	inch.	
Least observed degree of Moisture.....	360		
Maximum Temperature in the Shade....	32°.75	or	90.95
Minimum Temperature in ditto.....	6°.0	—	42.8
Maximum Temperature in the Sun	47.°0	—	116.6
Minimum of Terrestrial Radiation	5°.0	—	41.1
Mean Temperature of External Air.....	18°.0	—	64.4

WINDS.

North.....1 days.		N. East ....1 days.	
South 6	..	S.East.....1	..
East 6	..	N. West....0	..
West 5	..	S. West 11	..

31 days.

Amount of Rain ..... 0.41 inch.

AUGUST.

	1835.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
D	S.	1	30.123	19	17	2	Very Fine	30.061	26	13	13	Hot and Dry	30.031	15	14	1	Fine [ning
	S.	2	29.985	18	16	2	Overcast	29.942	24	14	10	Fine	—.003	15.5	15.5		Overcast, Light-
	M.	3	30.026	18 2	14	4.2	Dry Haze	30.019	23	12	11	Ditto	—.039	12.5	12 5	-	Fine
	T.	4	—.020	17	15	2	Fine	29.983	24.5	13	11.5	Ditto	—.029	13.5	13.5	—	Ditto
	W.	5	—.025	17	15	2	Ditto	—.978	26	12	14	Cloudy & Do.	29.997	16.5	16.5		Ditto
	Th.	6	—.017	20	17	3	Ditto	30.075	23.5	15	8.5	Ditto	30.031	17.5	17.5		Ditto
	F.	7	29.980	19	19	—	Slight Rain	29.959	23.5	19	4.5	Ditto	—.131	12	12	-	Ditto
O	S.	8	30.250	15	11	4	Fine, but Dry	30.259	21	10	11	Fine	—.330	11.5	11	0.5	Ditto
	S.	9	—.355	15	12	3	Ditto	—.334	22.5	11.5	11	Ditto	—.328	14	13	1	Ditto
	M.	10	—.302	20	15	5	Ditto	—.263	28	15	13	Hot and Dry	—.202	17	17	—	Ditto
	T.	11	—.109	23	18	5	Slight Haze	—.128	30.5	16	14.5	Ditto	29.903	16	15	1	Ditto
	W.	12	29.930	21	19	2	Overcast	29.930	27	18	9	Fine	30.023	19	13	6	Ditto
	Th.	13	30.081	18	9	9	Fine	30.064	23	13	10	Ditto	- .168	14	10	4	Ditto
	F.	14	—.212	16 5	12	4.5	Ditto	—.202	23	12	11	Ditto	—.211	14	14		Ditto
	S.	15	—.182	15.5	14	1.5	Ditto	—.148	25.5	10	15.5	Ditto	—.154	16	14	2	Ditto
☾	S.	16	—.166	20	18	2	Ditto	—.142	27	16.5	10.5	Cloudy & Do.	—.207	17	17	—	Cloudy
	M.	17	—.240	20.5	19.5	1	Dry Haze	—.257	23.5	19	4.5	Overcast, Fine	—.285	16	16	—	Fine
	T.	18	—.269	19	17	2	Ditto	—.247	25	18	7	Hot and Dry	- .237	16	16	—	Ditto
	W.	19	—.206	20	18.5	1.5	Ditto	—.139	27	18	9	Ditto	—.061	16.5	16.5	—	Ditto
	Th.	20	29.944	20	18.5	1.5	Ditto	29.852	26.5	14	12.5	Ditto	29.674	16.5	15	1.5	Ditto
	F.	21	—.643	18 5	17	1.5	Fine	—.566	27	18	9	Cloudy & Fine	—.522	19	19	—	Overcast
	S.	22	—.554	21	18	3	Ditto	—.585	25	15	10	Fine	—.690	14	14	—	Fine
	S.	23	—.727	20	16	4	Do. very Dry	—.758	22	15	7	Do. slight showers	—.736	17	17	—	Overcast
●	M.	24	—.571	17.5	17.5	—	Rain	—.550	24	20	4	Showery	—.534	14	14	—	Fine
	T.	25	—.570	16	16	—	Overcast	—.581	22	16	6	Cloudy & Fine	—.673	14	14	—	Overcast
	W.	26	—.672	13.5	13.5	—	Ditto	—.688	17	12	5	Overcast	—.696	13	13		Ditto
	Th.	27	—.734	12	12	—	Hazy	—.794	21	15	6	Fine	—.820	14	14	.	Fine
	F.	28	—.986	17	17	—	Overcast	30.021	22	13	9	Ditto	30.063	12	10	2	Clear & Ditto
	S.	29	30.055	15	15	—	Slight Haze	—.024	24	14	10	Ditto	—.041	9	9	—	Very Fine
	S.	30	—.058	14	14	—	Ditto	—.060	24	14	10	Ditto	—.059	14	14	—	Clear & Ditto
D	M.	31	—.088	14.5	12	2.5	Clear and Fine	—.053	24	12	12	Ditto	—.051	11	10	1	Ditto
	Cent.		30.002	17.76	15.56	2.20		29.989	24.25	14.61	9.64		29.997	14.73	14.09	0.64	
	Fah.			63.96	60.0	3.96			75.65	58.29	71.35			58.51	57.36	1.15	

AUGUST.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	29	10	45	9	SE	Little			This month may be said to have been one of continued, excessive, and almost uninterrupted dryness, for the amount of rain was less than ⅓ of an inch, most of which fell between the 23d and 25th. During half the number of days, the wind was easterly or from points adjoining. The temperature was high, the ground hot and parched, the sun powerful, and frequently a cloudless sky. The 11th was the hottest day in the season, the Thermometer in the shade between 92° and 93°, and 120° in sun's rays. Trees in many instances lost their foliage, and grass was mostly burned up. Except under an artificial atmosphere, plants could not maintain a flourishing condition; and although watering was made almost exclusively the labour of the garden, its aim was reduced to merely the preservation of vegetable life till a more congenial period.
2	27	12.2	42	11	E	Ditto			
3	23.5	6.5	39.5	5	NE	Ditto			
4	27.2	6.5	42.5	5.5	E	Ditto			
5	29	15	42.5	14	——	Ditto		.01	
6	25.2	15.5	36	14.5	SW	Brisk		.01	
7	29	5.5	38.5	4.5	——	Ditto		.01	
8	24.5	5	36	3	N	Ditto			
9	31.5	7.5	47	4.5	NE	Little			
10	32.5	20.5	48.5	18	S	Ditto			
11	33.5	12.7	49	9.5	——	Ditto			
12	30	14	42.7	11	W	Ditto			
13	25.5	8.7	41	5.5	NE	Ditto			
14	24.5	5.7	41	2.2	——	Ditto			
15	27.5	13	43.5	11	NW	Ditto			
16	27.5	13.5	44	12	——	Ditto			
17	25	13.2	36	12	——	Ditto			
18	27	14	42.5	12	E	Ditto			
19	28.7	13	44.5	11.5	——	Brisk			
20	30.5	14	46.7	12	——	Ditto			
21	31	16	46	14	S	Little			
22	26.5	9.5	42.5	7	——	Brisk			
23	24.5	12	42.5	9.2	SW	Ditto		.02	
24	26	10	41	7.2	S	Ditto		.09	
25	22.5	12.2	35	11.7	W	Ditto		.04	
26	21.5	7.2	35	6	——	Little			
27	22.5	8.2	40.5	6	E	Ditto			
28	22.5	5.2	36	1.7	——	Ditto			
29	26	5	42.5	3	——	Ditto			
30	26	5.2	43	3	——	Ditto			
31	25	5.2	39.5	3	——	Ditto			
Cent	26.84	10.43	41.67	8.37				0.18	
Fah.	80.32	50 77	107.00	47.06					

Mean Pressure from the 3 daily observations 29.996 inches. Fahr.

—— Temperature ..... Ditto	18°.91	or	66 03
—— Dew Point ..... Ditto	14°.75	—	58 55
—— Degree of Dryness ... Ditto	4°.16	—	7.48
—— Degree of Moisture ... Ditto	.789		
—— Force of Vapour ..... Ditto	.535	inch	
Least observed degree of Moisture	.402		
Maximum Temperature in the Shade	33°5	or	92.3
Minimum Temperature in ditto	5°0	—	41.0
Maximum Temperature in the Sun	49°.0	—	120.02
Minimum of Terrestrial Radiation	1°.75	—	35 15
Mean Temperature of External Air	18°.63	—	65.53

WINDS.

North.....1 days.	N. East.....4 days.
South.....5 ..	S. East .....1 ..
East.....11 ..	N. West .....3 ..
West.....2 ..	S. West.....4 ..

31 days.

Amount of Rain.....0.18 inch.

SEPTEMBER.

	Morning.						Noon.					Night.				
1835.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
T.	1	30.133	15	15	—	Fine	30.138	23	13	10	Fine	30.205	12.5	11	1.5	Clear & Fine
W.	2	—.226	13	12	1	Ditto	—.218	24	8	16	Hot and Dry	—.205	13	11	2	Ditto [ning
Th.	3	—.115	15	13	2	Ditto	—.044	2	10	13	Ditto	29.928	15	15	—	Cloudy,Light-
F.	4	29.822	19.5	19.5	—	Cloudy&warm	29.807	25.5	21	4.5	Very Sultry	—.817	17	17.5	—	Rain
S.	5	—.851	18.5	18.5	—	Ditto	—.894	24	18.5	5.5	Cloudy	30.053	17	16	1	Fine
S.	6	30.123	20	18	2	Fine	30.097	23	18	5	Fine	—.081	15.5	15.5	—	Ditto
○ M.	7	—.076	19	17	2	Ditto	—.092	22.5	14	8.5	Ditto	29.972	13.5	12	1.5	Ditto & Clear
T.	8	29.805	14	14	—	Slight Fog	29.704	21	16	5	Overcast	—.586	12.5	12.5	—	Rain
W.	9	—.707	13	9	4	Clear and cool	—.692	16.5	8.5	8	Fine	—.737	8.5	7	1.5	Clear
Th.	10	—.468	14.5	14.5	—	Rain	—.332	19	16	3	Windy	—.374	11	9.5	1.5	Windy
F.	11	—.452	11.5	10	1.5	Cold & windy	—.548	14	14	—	Stormy Show-	—.480	10	10	—	Cloudy & Do.
S.	12	—.343	15	15	—	Cloudy	—.309	17.5	12	5.5	Fine [ers	—.440	9.5	9.5	—	Clear
S.	13	—.547	14	12	2	Fine	—.599	18.5	12.5	6	Ditto	—.451	11	11	—	Showery
M.	14	—.846	11.5	11.5	—	Heavy Dew	—.860	18	15	3	Ditto	—.926	15	15	—	Slightly Clouded
☾ T.	15	—.899	17	15	2	Overcast	—.840	20	16	4	Cloudy	—.750	14.5	14.5	—	Rain
W.	16	—.825	10.5	10.5	—	Slight Haze	—.793	18.5	13	5.5	Ditto & Calm	—.751	9	9	—	Ditto
Th.	17	—.653	13	13	—	Fine	—.733	18	11	7	Fine	—.687	7.5	7.5	—	Clear
F.	18	—.810	7.5	7.5	—	Foggy	—.770	18	15	3	Cloudy	—.112	12.5	12.5	—	Rain
S.	19	—.529	16	16	—	Cloudy	—.595	20	13	7	Fine	—.118	14.5	14	0.5	Fine
S.	20	—.627	16	16	—	Heavy Rain	—.648	20	16	4	Ditto	—.821	13	12	1	Clear & windy
M.	21	—.876	15	15	—	Hazy	—.856	15.5	15.5	—	Rain	—.760	13	13	—	Cloudy
● T.	22	—.581	18.5	18.5	—	Fine	—.468	21.7	20	1.7	Fine	—.569	14	14	—	Showers
W.	23	—.645	17	15	2	Ditto	—.680	20	15	5	Ditto	—.749	14.5	14.5	—	Ditto
Th.	24	—.822	13	13	—	Rain	—.895	17.5	14.5	3	Overcast	—.959	11.5	10.5	1	Cloudy
F.	25	—.994	10	10	—	Fine	—.960	17.5	14	3.5	Very Fine	—.866	8	7.5	0.5	Clear
S.	26	—.686	13	12	1	Ditto	—.637	16.5	16.5	—	Rain	—.630	11	11	—	Rain
S.	27	—.600	10	10	—	Ditto	—.659	15.5	11	4.5	Fine	—.472	11.5	10	1.5	Overcast
M.	28	—.411	10.5	8.5	2	Ditto	—.576	12	5	7	Ditto	—.653	7.5	6.5	1	Clear
☽ T.	29	—.606	14	13	1	Cloudy	—.630	17	13	4	Cloudy	—.554	11	9	2	Ditto
W.	30	—.259	14.5	14.5	—	Rain	—.182	20	18	2	Fine	—.132	14.5	11.5	—	Cloudy
Cent.		29.745	14.30	13.55	0.75		29.742	19.24	14.10	5.14		29.694	12.30	11.75	0.55	
Fah.			57.74	56.39	1.35			66.63	57.38	9.25			54.14	53.15	0.99	

SEPTEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	26	4	43	2	SE	Little		This month put an end to the labour of watering out of doors, the quantity of rain being double the average, upwards of 4½ inches having fallen, which is more than fell since March, the month of May excepted. There was a moderate rain on the 3d and 4th, which rendered great service after so much drought. After the 8th, with few exceptions, it rained every day throughout the month. Lawns soon began to recover, and they acquired universal greenness surprisingly quick. There were only four days in which the wind was not either from a South, South-west, or West direction, and, notwithstanding the quantity of rain, the temperature was above the average.
2	28	6.5	45.5	4.5	----	Ditto		
3	28.5	12	45.5	9.5	——	Ditto	.17	
4	25.5	12.7	40	10.5	SW	Ditto	.15	
5	25.5	13	39.5	10.5	NW	Ditto		
6	26.2	13	41	10.5	SW	Ditto		
7	27	10	43.5	7	S	Ditto		
8	20	9	40.5	7	——	Ditto	.28	
9	18	7	38	5	W	Strong	.08	
10	21.2	10	28.5	8	——	Ditto	.06	
11	15.5	8.5	20	6.5	——	Ditto	.01	
12	19	4.5	25	3	——	Brisk	.49	
13	19.7	5.5	26	3.5	SW	Little	.06	
14	21.5	15	27.5	13	S	Ditto		
15	20	6.7	27.5	4	——	Brisk	.20	
16	19	6.5	27.7	5	——	Little	.17	
17	19.5	3.5	32	1.5	——	Ditto	.01	
18	20.5	10.5	28.5	9.5	——	Ditto	.76	
19	21	12.5	30	11	SW	Brisk	.60	
20	20.5	10.5	29.5	8.7	——	Strong	.08	
21	21	11.7	23.5	10	S	Little	.28	
22	22.5	12.5	27.2	10	——	Strong	.9	
23	20	11.5	24	10	——	Ditto	.33	
24	17	6	24	2.7	——	Little		
25	19.5	5.7	26.5	2	SW	Ditto		
26	16.5	7.2	21	6	S	Ditto	.69	
27	16.7	8.2	24	7	W	Ditto	.07	
28	16	5	19	1.2	SW	Brisk		
29	19.5	10	22.7	7.5	S	Ditto		
30	19	10	21	7	——	Ditto	.02	
Cent	21.00	8.30	29.72	6.45			4.60	
Fah.	69.80	46.94	85.49	43.61				

Mean Pressure from the 3 daily observations 29.729 inches. Fahr.
—— Temperature ..... Ditto ..... 15°.28 or 59.5
—— Dew Point ..... Ditto ..... 13°.13 — 55.63
—— Degree of Dryness .... Ditto ..... 2°.15 — 3.87
—— Degree of Moisture .. Ditto ..... .880
—— Force of Vapour ..... Ditto ..... .485 inch.
Least observed degree of Moisture ..... .390
Maximum Temperature in the Shade .... 28°5 or 83.3
Minimum Temperature in ditto ..... 3°5 — 38.3
Maximum Temperature in the Sun ..... 45°5 — 113.9
Minimum of Terrestrial Radiation ..... 1°5 — 34.7
Mean Temperature of External Air ..... 14°.65 — 58.37

WINDS.

North .....0 days		N. East ....0 days.	
South.....14 ..		S. East .....3 ..	
East.....0 ..		N. West.. .1 ..	
West ..... 5 ..		S. West ....7 ..	

30 days.

Amount of Rain.....4.60 inches.

OCTOBER.

		Morning.					Noon.					Night.				
1835.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
Th.	1	29.224	13	12	1	Fine	29.305	14.5	14.5	—	Stormy showers	29.220	13	13	—	Stormy, Rain
F.	2	—.182	14	14	—	Heavy Clouds	—.221	15.5	15.5	—	Rain	—.357	10	10	—	Clear
S.	3	—.379	9.5	9.5	—	Foggy	—.327	14.5	14.5	—	Hazy	—.207	10	10	—	Rain
S.	4	—.384	14	13	1	Fine	—.416	16	13	3	Fine	—.541	8.5	8	0.5	Clear
M.	5	—.661	8.5	8.5	—	Heavy Dew	—.742	15.5	13	2.5	Very Fine	—.846	6	6	—	Ditto
☉ T.	6	—.913	9.5	9.5	—	Ditto & Fine	—.921	16	16	—	Cloudy	—.962	8.5	8.5	—	Ditto
W.	7	30.029	10	10	—	Foggy	30.063	15	15	—	Ditto & Fine	30.105	10	9	1	Ditto [Fine
Th.	8	29.969	10.5	10.5	—	Ditto	29.887	15	12	3	Fine	29.704	9.5	9	0.5	Overcast and
F.	9	—.478	11	11	—	Rain	—.376	13.5	13.5	—	Showery	28.929	9	9	—	Slight Rain
S.	10	28.871	8	8	—	Ditto	—.070	10.5	5	5.5	Fine	29.235	5	4.5	0.5	Clear
S.	11	29.380	7.5	4.5	3	Clear & Windy	—.470	10	6	4	Overcast	—.735	7	3	4	Ditto
M.	12	—.902	4.5	3	1.5	Ditto and Cold	—.911	10	7	3	Cloudy	—.882	10	10	—	Rain
T.	13	—.949	12	12	—	Hazy	—.976	18.5	16	2.5	Ditto	30.141	13.5	13.5	—	Drizzly
☾ W.	14	30.227	13	13	—	Ditto	30.297	15.5	12	3.5	Ditto	—.356	12.5	12	0.5	Overcast
Th.	15	—.404	12	12	—	Ditto	—.394	16	11	5	Ditto & Fine	—.431	11.5	11.5	—	Ditto
F.	16	—.429	11	11	—	Ditto	—.396	13.5	11	2.5	Dry Haze	—.317	10	10	—	Ditto
S.	17	—.310	10	10	—	Ditto	—.298	14	10	4	Ditto	—.278	7.5	6.5	1	Ditto
S.	18	— 328	10	10	—	Ditto	—.273	13	8	5	Cloudy & Fine	—.348	4	4	—	Clear
M.	19	—.321	1.5	1.5	—	Hoar Frost	—.205	11	8	3	Very Fine	—.112	0	0	—	Ditto
T.	20	29.951	0	0	—	Frosty	29.845	10	8	2	Overcast	29.795	7	7	—	Rain
W.	21	—.815	3.5	3.5	—	Hazy	—.808	11	11	—	Fine	—.804	0.5	0.5	—	Clear
● Th.	22	—.626	6.5	6.5	—	Rain	—.569	11.5	11.5	—	Showery	—.480	9.5	9.5	—	Rain
F.	23	—.679	4.5	4.5	—	Clear	—.745	11	7	4	Fine	—.467	12	12	—	Windy, Rain
S.	24	—.679	8.5	8.5	—	Slightly Overcast	—.699	12.5	12.5	—	Ditto	—.737	6	6	—	Cloudy
S.	25	—.739	8	8	—	Ditto	—.626	11	11	—	Rain	—.248	12	12	—	Stormy
M.	26	—.303	7	6	1	Very Clear	—.295	12	10	2	Fine	—.535	6	6	—	Windy
T.	27	—.685	3.5	3.5	—	Ditto	—.766	9.5	4	5.5	Ditto	—.973	2.5	2.5	—	Clear
☽ W.	28	30.010	0	0	—	Do. & Frosty	30.023	9	6	3	Ditto	30.087	4.5	4.5	—	Overcast
Th.	29	29.900	10	10	—	Rain	29 907	15 5	15.5	—	Showery	—.149	3.5	3.5	—	Clear
F.	30	30.245	0.5	0.5	—	Foggy	30.187	7.5	7.5	—	Foggy	—.086	8	8	—	Rain
S.	31	29.907	9	9	—	Hazy, Rain	29.889	13.5	13.5	—	Showery	—.071	8	8	—	Clear
Cent.		29.802	8.08	7.84	0.24		29.803	12.95	10.92	2.03		29.813	7.90	7.64	0.26	
Fah.			46.54	46.11	0.43			55.31	51.65	3.65			46.22	45.75	0.45	

OCTOBER.

Days.	Temperature. Max.	Min.	Sun.	Rad.	Wind. Direction.	Force.	Rain. In.	Pts.
1	15	10	21.5	7	S	Brisk		.53
2	15.5	4.5	15.5	2.5	——	Little		.23
3	14.5	4.5	19	2.2	SE	Ditto		.21
4	15.5	4	19.5	1.7	W	Ditto		.01
5	16.7	3	22	1.5	——	Ditto		
6	17.7	5.7	23	4	SW	Ditto		.06
7	15.5	8	21.5	5.7	E	Ditto		
8	15.2	7.2	21.5	4.5	——	Brisk		.10
9	12.2	7.7	14	6.7	SW	Ditto		.52
10	12.7	2.2	18	—1	NW	Ditto		.01
11	14	2.5	15.5	—1	——	Ditto		
12	15	7	16	5.7	W	Little		.14
13	18.5	11.5	22	10.5	——	Brisk		.02
14	14.5	11	20	9.5	——	Little		
15	15	9.5	18.5	8.5	NE	Ditto		
16	13	11	13.2	7.7	SE	Ditto		
17	12.7	5	15.5	1.5	NW	Ditto		
18	12	—1	14	—4.5	NE	Ditto		
19	11.7	—2.5	25	—4.7	SE	Ditto		
20	12.5	3	18.5	0	SW	Ditto		.13
21	12.2	—0.2	19	—3.5	W	Ditto		.06
22	12.7	4	17.5	1.2	S	Ditto		.20
23	12.7	7.2	18.5	4	W	Ditto		.26
24	14	4	18.2	1.7	S	Ditto		.01
25	13.5	6.2	13.5	4 5		Ditto		.67
26	14	0	16	—2	SW	Brisk		.02
27	11	—1	18.2	—4.5	W	Little		
28	15.5	4	21.5	0.5	S	Ditto		.25
29	15	—0.5	17	—3	SW	Brisk		
30	12.7	8	15.5	7.5	SE	Little		.58
31	14	3.5	18	1.7	W	Ditto		.04
Cent	14.10	4.53	18.31	2.46				4.05
Fah.	57.38	40.14	64.95	36.49				

Remarks.

Rain still continued to fall in large quantities, and the amount far exceeded the usual average. More than half an inch fell on the 1st, 9th, 25th, and 30th respectively. The temperature at night became generally low after the 1st; and frost of such severity as to spoil the Dahlias was experienced on the 18th and 19th. The atmosphere on the 10th did not balance 29 inches of mercury, the Barometer falling to 28.871, its extreme lowest during the season, except on the 7th of March. The night of the 25th was very stormy. The mornings were frequently foggy or hazy. The mean temperature was 10° Fah. lower than that of the preceding month.

Mean Pressure from the 3 daily observations	29.806 inches.		Fahr.
—— Temperature.....Ditto.....	9°.64	or	49.35
—— Dew Point.....Ditto.....	8°.80	—	47.84
—— Degree of Dryness....Ditto.....	0°.84	—	1.51
—— Degree of Moisture....Ditto.....	.954		
—— Force of Vapour.....Ditto.....	.374 inch.		
Least observed degree of Moisture.....	.708		
Maximum Temperature in the Shade....	17°.75	or	63.95
Minimum Temperature in ditto.....	2°.5	—	27.85
Maximum Temperature in the Sun.....	25°.0	—	77.00
Minimum of Terrestrial Radiation.....	4°.75	—	23.55
Mean Temperature of External Air.....	9°.31	—	48.75

WINDS.

North	0 days.	N. East.....	2 days.
South	6 ..	S. East.....	4 ..
East.....	2 ..	N. West	3 ..
West.....	9 ..	S. West.....	5 ..

31 days.

Amount of Rain ..... 4.05 inches.

NOVEMBER.

		Morning.					Noon.					Night.				
1835.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer			Weather.
S.	1	30.218	5	5	—	Hazy	30.219	10	7	3	Slightly overcast	30.276	2	2	—	Clear
M.	2	—.298	2	2	—	Dense Fog	—.237	9	9	0	Rain	—.145	7	6.5	0.5	Overcast
T.	3	—.094	7	7	—	Rain	—.079	8.5	8.5	—	Slight Rain	—.071	6	6	—	Ditto
W.	4	—.099	5	3	2	Overcast	—.076	6.5	1	5.5	Overcast	—.059	5	5	—	Ditto
○ Th.	5	—.008	4	3	1	Cold Haze	29.980	8	5	3	Ditto	29.938	2.5	1.5	1	Ditto
F.	6	29.938	0	0	—	Sharp Frost	—.932	5	5	0	Fine	30.039	1	1	—	Slight Fog
S.	7	—.986	0.5	0.5	—	Frosty Haze	30.053	8.5	7	1.5	Overcast	29.930	9	9	—	Rain
S.	8	30.026	6	6	—	Fine	—.036	9	6	3	Clear	30.024	3.5	2.5	1	Clear
M.	9	—.149	4.5	4.5	—	Overcast	—.177	4.5	4.5	—	Cloudy&Cold	—.471	3.5	2	1.5	Overcast
T.	10	—.343	2.5	0	2.5	Cloudy & Cold	—.388	3.5	3.5	—	Ditto	—.438	2	0.5	0.5	Ditto
W.	11	—.441	2	2	—	Overcast	—.409	6.5	4	2.5	Cloudy	—.343	4	2	2	Cloudy
Th.	12	—.249	3	3	—	Cloudy	—.249	7	5	2	Fine but cold	—.317	3	2.5	0.5	Fine
☾ F.	13	—.409	2.5	2.5	—	Rain	—.405	5.5	5.5	—	Cloudy	—.370	3.5	2.5	1	Overcast & Fine
S.	14	—.235	2	2	—	Overcast	—.148	6.5	4	2.5	Fine	—.148	5.5	5.5	—	Ditto
S.	15	—.151	5	5	—	Ditto	—.117	7.5	5.5	2	Cloudy	—.107	2.5	2.5	—	Cloudy
M.	16	—.052	3	3	—	Ditto	—.018	7.5	6	1.5	Fine	—.031	6	6	—	Ditto
T.	17	29.979	5	5	—	Hazy	29.941	8.5	8.5	—	Hazy	29.890	8.5	8	0.5	Ditto
W.	18	—.865	8.5	8.5	—	Overcast	—.763	12	11	1	Fine	—.946	5	4.5	0.5	Clear, Aurora
Th.	19	30.034	2	2	—	Clear	30.062	8.5	7	1.5	Very Fine	30.051	2.5	2.5	—	Fine [Borealis
● F.	20	—.057	7	7	—	Slight Haze	—.013	10.5	10.5	—	Showery	29.963	10	10	—	Ditto
S.	21	29.935	9.5	9.5	—	Clear	29.931	12	10	2	Fine	—.906	10	9	1	Very Fine
S.	22	—.875	10	10	—	Overcast	—.818	12.5	10	2.5	Cloudy&Fine	—.768	11	10	1	Cloudy and
M.	23	—.859	10	10	—	Rain	—.866	13	11	2	Ditto	—.865	9	7.5	1.5	Fine [Windy
T.	24	—.863	8.5	8.5	—	Fine	—.881	12	11	1	Fine	—.836	10	10	—	Clear
W.	25	—.838	9	9	—	Clear	—.826	12.5	10	2.5	Ditto	—.733	10	10	—	Ditto
Th.	26	—.717	10.5	10.5	—	Hazy	—.567	13.5	13	0.5	Very Fine	—.419	12.5	12.5	—	Windy
☽ F.	27	—.415	11	11	—	Overcast	—.362	12	12	—	Rain	—.330	10	10	—	Fine
S.	28	—.351	7	7	—	Ditto	—.442	10.5	10.5	—	Ditto	—.628	5	5	—	Slightly over-
S.	29	—.568	7	7	—	Slightly overcast	—.442	9.5	9.5	—	Ditto	—.323	9	9	—	Ditto [cast
M.	30	—.152	10	10	—	Rain	—.146	13	13	—	Fine	—.265	10	10	—	Ditto
Cent.		29.973	5.63	5.45	0.18		29.955	8.75	7.43	1.32		29.954	6.28	5.86	0.42	
Fah.			42.13	41.81	0.32			47.75	45.37	2.38			43.30	42.55	0.75	

NOVEMBER.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	10.5	0	16	2.5	S	Little			Up to the 25th, the weather was, on the whole, favourable for the operations of the garden. From that time to the end of the month, it was very wet. The mean temperature was only between 3 and 4° lower than that of the preceding month. The 18th was fine, the wind strong from the south-west, but it moderated towards night. In the evening a splendid Aurora Borealis overspread almost the whole of the visible northern hemisphere, at times prolonging its streamers, from the horizon, even beyond the zenith. There was a dense fog on the 2nd, but such a state of weather was not so prevalent throughout the month as to equal, in this respect, the usual characteristic of November.
2	10.5	6.7	12	3.5	SE	Ditto		.28	
3	9.2	4.5	9.5	1.2	S	Ditto		.04	
4	6.5	3	9	1.5	——	Brisk			
5	5.7	—2	6	—5	SE	Little			
6	9	—2	12.5	—5.2	SW	Ditto			
7	10.2	2.5	14.5	0	SE	Ditto		.20	
8	10.5	2.5	17	0.2	W	Ditto			
9	5	—1	5.5	1.5	E	Ditto			
10	4.5	1	8	0	NE	Brisk			
11	7.5	2.5	11.5	0	N	Little			
12	8	2.5	11.5	0.5	——	Brisk		.05	
13	7.7	2	9.5	0	NE	Little		.02	
14	7.5	3.5	11.7	2.7	N	Ditto		04	
15	8	2.5	10.5	0.5	——	Ditto			
16	8.5	1.5	10	1.7	W	Ditto			
17	11	5.7	11	3.5	S	Ditto			
18	12.5	2	14.5	1	SW	Strong			
19	10	0.5	15	1.2	——	Little			
20	12.5	8.2	17.5	6	S	Brisk			
21	12.5	9.5	14.5	7.2	SW	Ditto			
22	12.2	10	14	8.5	S	Ditto		.20	
23	13.2	7.5	15	3	——	Little			
24	14	9.7	17.5	6.2	——	Ditto			
25	12.5	10.5	14.5	7.5	——	Ditto		.09	
26	14	11	17	9.5	——	Ditto		.15	
27	11.7	7.5	11.7	4.2	——	Ditto		.49	
28	10.7	4	11.7	0.5	SW	Ditto		.02	
29	11	9	11.5	8	SE	Ditto		.34	
30	14.5	7.5	15.5	0.5	S	Brisk		.02	
Cent	10.05	4.40	12.52	1.74				1.94	
Fah	50.09	39.92	53.04	35.13					

Mean Pressure from the 3 daily observations 29.961 inches. Fahr.
—— Temperature.....Ditto..... 6°.88 or 44.38
—— Dew Point.....Ditto..... 6°.24 — 43.23
—— Degree of Dryness.....Ditto..... °.64 — 1.15
—— Degree of Moisture.....Ditto..... .957
—— Force of Vapour.....Ditto..... .318 inch.
Least observed degree of Moisture..... .705
Maximum Temperature in the Shade..... 14°.5 or 58. 1
Minimum Temperature in ditto..... —2°.0 — 28. 4
Maximum Temperature in the Sun..... 17°.5 — 63. 5
Minimum of Terrestrial Radiation.....—5°.25 — 22.55
Mean Temperature of External Air..... 7°.22 — 44.99

WINDS.

North	4 days	N. East	2 days
South	12 ..	S. East	4 ..
East	1 ..	N. West	0 ..
West	2 .	S. West	5 ..

30 days.

Amount of Rain.....1.94 inch.

DECEMBER.

		Morning					Noon.					Night.				
1835.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
T.	1	29 406	7	7	—	Clear	29.404	11.5	10	1.5	Very Fine	29.336	11	11	—	Cloudy & windy
W.	2	—.485	6.5	6.5	—	Ditto	—.566	10	8	2	Ditto	—.658	3.5	3.5	—	Clear & Fine
Th.	3	—.716	8	8	—	Cloudy	—.712	10.5	10.5	—	Cloudy & Fine	—.681	10	10	—	Overcast
F.	4	—.766	3.5	3.5	—	Clear	—.816	7.5	7.5	—	Ditto	30.041	2.5	2.5	—	Clear
● S.	5	30.228	3.5	3.5	—	Overcast	30.258	8.5	8.5	—	Fine	—.148	6	6	—	Fine
S.	6	—.200	1	1	—	Frosty	—.165	7.5	6.5	—	Ditto	—.164	0.5	0.5	—	Foggy
M.	7	—.185	2.5	2.5	—	Foggy	—.185	4	4	—	Foggy	—.182	4	4	—	Overcast & Fine
T.	8	—.134	2.5	2.5	—	Hazy	—.066	4	4	—	Hazy	29.797	5.5	5.5	—	Rain
W.	9	29.805	5	5	—	Stormy clouds	29.911	5.5	5.5	—	Clearing	30.176	—0.5	—1.5	1	Clear
Th.	10	30.360	—1.5	—1.5	—	Snow	30.427	0.5	0.5	—	Slight Snow	—.422	—5.5	—5.5	—	Ditto
F.	11	—.291	—6.5	—6.5		Sharp Frost.	—.284	0	—2	2	Clear & Frosty	—.335	—6.5	—6.5	—	Ditto
S.	12	—.351	—3.5	—3.5	—	Ditto	—.331	2	2	—	Overcast	—.343	0.5	—1	1.5	Ditto
☾ S.	13	—.374	—3	—3	—	Ditto	—.348	3	3	—	Fine	—.377	0	0	—	Foggy
M.	14	—.392	1.5	1.5	—	Foggy	—.271	4.5	4.5	—	Hazy	—.379	2	2	—	Hazy
T.	15	—.389	1.5	1.5	—	Hazy	—.262	4.5	4.5	—	Ditto	—.381	3	3	—	Ditto
W.	16	—.399	3.5	3.5	—	Foggy	—.407	5	5	—	Foggy	—.477	3	3	—	Dense Fog
Th.	17	—.409	2	2	—	Ditto	—.362	4	4	—	Hazy	—.324	3.5	3.5	—	Overcast
F.	18	—.134	4.5	4.5	—	Clear	—.094	3	3	—	Hail Shower	—.022	5.5	4.5	1	Fine
○ S	19	—.025	0.5	—1	1.5	Ditto	29.988	2	2	—	Cloudy & Cold	—.001	0	0	—	Overcast
S.	20	—.011	—0.5	0.5	—	Snow	30.036	0	0	—	Ditto	—.101	0	0	—	Stormy
M.	21	—.202	0	0	—	Overcast	—.202	—0.5	—1.5	—	Clear & Cold	—.394	—4	—4	—	Clear
T.	22	—.414	—3.5	—3	0.5	Hard Frost	—.457	1	0	1	Frosty	—.622	—5	—5	—	Fine
W.	23	—.624	—7	—7	—	Foggy and Do.	—.609	—1	—1	—	Ditto & Foggy	—.597	—2.5	—2.5	—	Ditto
Th.	24	—.543	—1.5	—1.5	—	Ditto	—.513	—1	—1	—	Ditto	—.484	—3.5	—3.5	—	Ditto
F.	25	—.457	—8	—8	—	Frosty	—.424	—3.5	—3.5	—	Ditto	—.424	—4.5	—4.5	—	Dense Fog
☽ S.	26	—.443	—7	—7	—	Ditto & Foggy	—.434	—5	—5	—	Ditto	—.390	—6	—6	—	Frosty
S.	27	—.343	—3	—3	—	Do. & Cloudy	- .308	2.5	2.5	—	Slightly overcast	—.300	2.5	2.5	—	Cloudy
M.	28	—.195	4	4	—	Fine	—.131	8	8	—	Cloudy	—.205	6	6	—	Clear& Fine
T.	29	—.298	1.5	1.5	—	Overcast	—.304	5	5	—	Ditto	—.324	4.5	4.5	—	Cloudy & Fine
W.	30	—.250	5	5	—	Ditto	—.232	7	7	—	Ditto [Fog	—.343	2.5	2.5	—	Fine
Th.	31	—.373	—2.5	—2.5	—	Frosty	—.348	—1.5	—1.5	—	Dense Frosty	—.360	—1	—1	—	Overcast
Cent.		30.200	0.51	0.45	0.06		30.192	3.43	3.22	0.21		30.218	1.21	1.10	0.11	
Fah.			32.91	32.81	0.10			38.17	37.79	0.38			34.17	33.98	0.19	

DECEMBER.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	12.7	6.7	15.5	3.5	S	Little			The mean temperature of this month averaged very little more than 2° above the freezing point. Frost set in about the 19th, and continued with increasing severity till it reached its maximum intensity for the past season, about the 25th and 26th; the minimum being 16° below freezing, and by the Radiating Thermometer 23° Fahr.; yet the ice, where there was a considerable body of water, was unsafe, and a number of lives were lost in the Serpentine. Frost of less intensity, and of shorter duration in the end of winter, has been observed to penetrate further in the ground, and occasion a much greater thickness of ice, than was the case in the present month. At this time the freezing process was doubtless unusually counteracted in consequence of the earth and water retaining much of the high temperature of the preceding summer.
2	11	0.5	16	—2.5	SW	Ditto		.02	
3	10.5	5	11	2.5	S	Ditto		.02	
4	9	2	11.5	—0.5	SW	Ditto		.02	
5	9.5	—0.5	12	—3	——	Ditto			
6	9.5	0	13	—1	S	Ditto		.01	
7	5	2	5	1	W	Ditto			
8	6	3	6	2	SW	Brisk		.11	
9	6.7	—3.2	8	—7	N	Little			
10	1	—6.5	4	—12	S	Ditto			
11	1.5	—7	5	—11.5	——	Ditto			
12	3.2	—3.5	4	—7	SW	Ditto			
13	5.5	—2.7	10	—5.5	——	Ditto			
14	4.5	1	4.5	0.5	S	Ditto			
15	4.5	2	4.5	1	——	Ditto			
16	5	0.5	5	0	NW	Ditto		.01	
17	6.5	1.2	6.7	—2.5	SW	Ditto			
18	8.5	1	9.5	—1.7	N	Brisk		.06	
19	2.5	—0.5	4	—1.5	——	Ditto			
20	0.5	—0.5	0.5	—1	NE	Ditto			
21	0.5	—3.2	0.5	—6	——	Ditto			
22	2	—8.5	5.5	—12	——	Little			
23	—0.5	—4.5	2	—5	SW	Ditto			
24	—1	—7	—1	—7.5	NW	Ditto			
25	—2.5	—8	—0.5	—13	S	Ditto			
26	—0.5	—8.7	—2	—11	——	Ditto			
27	6	0	6.5	—0.5	SW	Ditto			
28	7.5	1.5	8	—2	——	Brisk			
29	6	2.5	6	—1	W	Little			
30	8	—3.5	8	—7	NW	Brisk			
31	—0.5	—3	0	—6	S	Little			
Cent	3.81	—1.36	6.09	—4.12				0.25	
Fah.	38.85	29.56	42.96	24.59					

			Fahr.
Mean Pressure from the 3 daily observations	30,203 inches.		
—— Temperature .....Ditto.....	1°.71		35.07
—— Dew Point .....Ditto.....	1°.59		34.86
—— Degree of Dryness .....Ditto.....	0°.12		.21
—— Degree of Moisture .....Ditto.....	.991		
—— Force of Vapour.....Ditto.....	.238	inch.	
Least observed degree of Moisture	.890		
Maximum Temperature in the Shade.....	12.75		54.95
Minimum Temperature in ditto.....	—8.75		16.25
Maximum Temperature in the Sun.....	16.0		60.8
Minimum of Terrestrial Radiation.....—13.0			8.6
Mean Temperature of External Air.....	1.22		34.19

WINDS.

North .....3 days		N. East .....3 days	
South 10	..	S. East 0	.
East 0	..	N. West 3	..
West 2	..	S. West 10	..

31 days.

Amount of Rain .....0.25 inch.

Monthly Mean Pressure, Temperature, and Dew Point, &c. of 1835; deduced from the Observations recorded in the preceding Journal.

1835.	Pressure.								Temperature.												
					Mean at			Mean of the three Observa-tions.	In the Shade.			Mean at			Mean of the three Observs	In Sun's Rays.		Terrestrial Radiation		Med. of Sun and Radn.
Months.	Max.	Min.	Med.	Range of Barom.	Morn.	Noon.	Night.		Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max	Min.	
Jan. .	30.856	29.081	30.110	1.775	30.097	30.107	30.123	30.109	11.5	—7.7	3.74	2.88	5.62	3.22	3.90	15.0	0.0	6.0	— 9.5	3.32
Feb. .	30.531	29.039	29.854	1.492	29.863	29.864	29.836	29.854	13.5	—4.5	6.26	4.92	8.80	4.78	6.16	15.0	8.0	8.0	— 7.25	6.00
March	30.606	28.851	29.985	1.755	29.967	29.952	30.009	29.976	17.5	—3.7	6.26	4.86	9.13	4.11	6.03	20.5	9.5	7.5	— 7.5	6.40
April	30.499	29.558	30.139	0.941	30.148	30.135	30.131	30.138	23.0	—3.5	9.12	8.78	13.41	6.55	9.58	27.5	10.0	9.7	— 7.0	9.89
May .	30.196	29.487	29.891	0.709	29.902	29.886	29.892	29.893	24.7	2.5	12.26	12.66	16.92	9.43	13.00	31.0	15.2	10.0	— 1.0	13.68
June.	30.375	29.253	30.051	1.112	30.063	30.034	30.049	30.048	30.5	3.0	16.10	16.88	21.40	13.75	17.34	39.0	17.0	15.0	1.5	19.54
July .	30.275	29.744	30.061	0.531	30.061	30.060	30.062	30.061	32.7	6.0	18.00	19.04	24.51	14.79	19.44	47.0	25.0	12.5	5.0	23.26
Aug.	30.355	29.522	29.998	0.833	30.002	29.989	29.997	29.996	33.5	5.0	18.63	17.76	24.25	14.73	18.91	49.0	35.0	14.5	1.75	25.02
Sept.	30.226	29.132	29.722	1.094	29.745	29.742	29.694	29.729	28.5	3.5	14.65	14.30	19.24	12.30	15.28	45.5	19.0	13.0	1.5	18.08
Oct. .	30.431	28.871	29.807	1.560	29.802	29.803	29.813	29.806	17.7	—2.5	9.31	8.08	12.95	7.90	9.64	25.0	13.2	10.5	— 4.75	10.38
Nov..	30.471	29.152	29.962	1.319	29.973	29.955	29.954	29.961	14.5	—2.0	7.22	5.63	8.75	6.28	6.88	17.5	5.5	9.5	— 5.25	7.13
Dec. .	30.624	29.336	30.202	1.288	30.200	30.192	30.218	30.203	12.7	—8.7	1.22	0.51	3.43	1.21	1.71	16.0	0.0	3.5	—13.0	0.98
Aver.	30.454	29.252	29.981	1.202	29.985	29.976	29.981	29.981	21.7	—1.05	10.23	9.69	14.03	8.25	10.65	29.00	13.11	9.97	— 3.80	11.97

1835.	Hygrometer indicating Dew Point.								Scale of the Winds.									Rain.
	Mean Dew Point at			Mean Dew Point.	Mean Force of Vapour.	Mean degree of Dryness.	Mean degree of Moisture.	Least degree of Moisture.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Days.	In. Pts.
Months.	Morn.	Noon.	Night.															
Jan. .	2.63	4.49	3.13	3.41	265	0.49	970	677	2	2	2	4	3	10	6	2	31	0.72
Feb. .	4.55	6.44	4.71	5.23	293	0.93	937	680	3	0	0	0	0	14	7	4	28	2.61
March	4.46	6.37	3.95	4.93	290	1.10	923	600	1	7	1	1	1	10	8	2	31	1.97
April	7.20	6.65	6.33	6.73	329	2.85	843	356	8	4	1	0	1	7	6	3	30	1.07
May .	11.08	11.54	9.43	10.68	417	2.31	865	511	3	1	4	0	4	9	9	1	31	3.38
June.	13.83	14.58	13.53	13.98	510	3.35	822	411	7	4	0	3	5	4	5	2	30	1.99
July .	15.61	14.17	14.04	14.61	493	4.83	706	360	1	1	6	1	6	11	5	0	31	0.41
Aug.	15.56	14.61	14.09	14.75	535	4.16	789	402	1	4	11	1	5	4	2	3	31	0.18
Sept.	13.55	14.10	11.75	13.13	485	2.15	880	390	0	0	0	3	14	7	5	1	30	4.60
Oct.	7.84	10.92	7.64	8.80	374	0.84	954	703	0	2	2	4	6	5	9	3	31	4.05
Nov.	5.45	7.43	5.86	6.24	318	0.64	957	705	4	2	1	4	12	5	2	0	30	1.94
Dec. .	0.45	3.22	1.10	1.59	238	0.12	991	890	3	3	0	0	10	10	2	3	31	0.25
Aver.	8.51	9.54	7.96	8.67	379	1.98	886	557	33	30	28	21	67	96	66	24	365	23.17

The preceding Table, as regards Temperature, and the Dew Point, is in terms of the Centigrade Thermometer ; the following is a reduction of the same to Fahrenheit's scale.

1835.	Temperature.												Hygrometer indicating Dew Point.				
	In the Shade.			Mean at			Mean of the three Observa-vations.	In Sun's Rays.		Terrestrial Radiation.		Med. of Sun and Radia-tion.	Mean Dew Point at			Mean Dew Point.	Mean degree of Dryness.
Months.	Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.		Morn.	Noon.	Night.		
Jan. .	52.7	18.9	39.7	37.1	42.1	37.8	39.0	59.0	32.0	42.8	14.9	37.9	36.7	40.0	37.6	38.1	0.88
Feb. .	56.3	23.9	43.2	40.8	47.8	40.6	43.0	59.0	46.4	46.4	18.9	42.8	40.2	43.6	40.4	41.4	1.67
March	63.5	25.2	43.2	40.7	48.4	39.4	42.8	68.9	49.1	45.5	18.5	43.5	40.0	43.4	39.1	40.8	1.98
April	73.4	25.7	48.4	47.6	56.1	43.8	49.2	81.5	50.0	49.4	19.4	49.8	44.9	43.9	43.4	44.1	5.13
May .	76.5	36.5	54.0	54.7	62.4	48.9	55.4	87.8	59.3	50.0	30.2	56.6	51.9	52.7	48.9	51.2	4.16
June.	86.9	37.4	60.9	62.3	70.5	56.7	63.2	102.2	62.6	59.0	34.7	67.1	56.9	58.2	56.3	57.1	6.04
July .	90.9	42.8	64.4	66.2	76.1	58.6	67.0	116.6	77.0	54.5	41.1	73.8	60.0	57.5	57.2	58.3	8.70
Aug.	92.3	41.0	65.5	63.9	75.6	58.5	66.0	120.0	95.0	58.1	35.1	77.0	60.0	58.3	57.3	58.5	7.48
Sept.	83.3	38.3	58.3	57.7	66.6	54.1	59.5	113.9	66.2	55.4	34.7	64.5	56.3	57.3	53.1	55.6	3.87
O t. .	63.9	27.8	48.7	46.5	55.3	46.2	49.3	77.0	55.7	50.9	23.5	50.6	46.1	51.6	45.7	47.8	1.51
Nov.	58.1	28.4	44.9	42.1	47.7	43.3	44.3	63.5	41.9	49.1	22.5	44.8	41.8	45.3	42.5	43.2	1.15
Dec. .	54.9	16.2	34.2	32.9	38.1	34.1	35.0	60.8	32.0	38.3	8.6	33.7	32.8	37.8	33.9	34.8	0.21
Aver.	71.07	30.17	50.4	49.4	57.2	46.8	51.1	84.2	55.6	49.9	25.1	53.5	47.3	49.1	46.3	47.5	3.56

XIII. *A Note upon Oncidium Lanceanum; a new species of Orchideous Epiphyte.* *By* JOHN LINDLEY, Ph. D. F.R.S. &c. &c. *Assistant Secretary.*

IN the year 1834 JOHN HENRY LANCE, Esq. upon his return to England from Surinam, where he had been residing several years, brought with him a considerable collection of Orchideous Epiphytes, which he presented to the Society. Among other interesting species was the subject of the following memorandum; a plant, than which a more acceptable addition to the hot-houses of this country has rarely been made.

The genus Oncidium already includes several very beautiful species, in particular *O. flexuosum, bifolium, ampliatum* and *crispum*, but all these have flowers in which yellow or brown are the only colours, they owe their beauty to the graceful arrangement of their branches, and to the singular form of their petals, rather than to their colour, and moreover their blossoms are destitute of fragrance. When, therefore, it was ascertained that among Mr. LANCE's plants there existed an Oncidium with violet-coloured sweet-scented flowers, great interest was excited, and no pains were spared to ensure its successful cultivation. Many plants were soon distributed by Mr. LANCE's orders, one of which blossomed in the hot-house of the Messrs. LODDIGES, and another shortly after in that of the Society. The plant was found by no means difficult to manage; in point of beauty and fragrance it more than answered all the expectations that had been entertained of it; and it was, consequently, selected as a proper subject for publication in these Transactions.

The roots are flexuose, slender, simple elongations of the base

Cypripedium Lawrenceanum?

of the stem, evidently intended to grow upon places where the quantity of mould is insufficient to cover them; they lengthen independently of their growth at the point, like the aerial roots of other Epiphytal Orchideæ, and differ from those of other Oncidiums only in being of a greenish yellow colour. The leaves spread from a very short, woody, annulated root-stock, and are about a foot in length on the average; they are of a broadly oblong figure, of a leathery consistence, are nearly flat, a little curved back at the point, and have a light green colour faintly mottled with purple. The flowers are disposed in a short-branched rigid panicle, elevated on a stalk not quite so long as the longest leaves; it is about six or nine inches long, and densely covered with flowers, which sometimes assume a corymbose, sometimes a racemose arrangement. The flowers when expanded measure an inch and three quarters from the tip of their back sepal to the point of their lip; they emit a delicious fragrance resembling that of the garden pink. The sepals are oblong, concave, obtuse, a little waved and greenish yellow at the edge, bright yellow in the middle, and regularly marked with broad blotches of crimson which run together near the base. The two petals are similar to the sepals. The lip is bright violet, darkest at the lower half; at the base it is prolonged on each side into a triangular tooth, and in the middle of the base there are three nearly equal tubercles which towards the column terminate a ridge that gradually lowers and then disappears at the expanded portion of the lip; above the base it is narrow, it then expands again into a broad, thin, light purple, somewhat truncated and toothed extremity. The column has an oblique, rounded, earlike appendage on each side, and is capped by a rich crimson anther.

Such was the specimen from which the annexed drawing was taken; but it was far inferior to one which I have just seen (June 29, 1836), in the rich collection of epiphytes belonging to the

Messrs. Rollissons of Tooting. This plant, which I regard as the most perfect instance of successful cultivation I have yet witnessed among epiphytes, had leaves eighteen inches long, and upwards of thirty flowers two inches and a quarter in expansion, with all the markings of the sepals and petals of the richest chocolate brown, and of the lip of the deepest violet. In fragrance there was a resemblance to the spicy odour of that sweetest of all flowers Aerides cornutum.

In the Society's garden this plant is cultivated along with other epiphytes in a dwarf hothouse facing the south; it is planted in a mixture of sandy peat, potsherds, and decayed wood; and under these circumstances it thrives very well.

Mr. Lance has favoured me with the following account of the discovery and subsequent management of this remarkable plant in its native country.

" The first specimen of this splendid Epiphyte I discovered, was growing on the trunk of a large tamarind tree, in a noble avenue of those trees close to the Government House in Surinam. I took it home with me and planted it in a pot filled with rotten pieces of wood and a little light earth; but though it remained alive and flowered once or twice, it did not thrive, but wasted away and became less. I afterwards found a great number of the plants in different parts of the colony; they were generally attached to the stems or branches of the Tamarind, the Sapodilla, or the Calabash trees, appearing to prefer those to any other; however, on being tied to the branches of the Orange, the Soursop, the Mammee, and even the Brugmansia arborea, it grew well upon them all and produced vigorous stems with upwards of twenty blossoms on each stem. The scent is extremely fragrant, and is retained after the flower is dried, only becoming fainter and more of a spicy flavour than when fresh. The plant remains in full beauty ten or twelve days, a long period in that climate, and I found that it always required a shady

situation and a living stem to grow upon, without which it would not produce its flowers in the highest perfection."

Although the Society's sense of the importance of Mr. Lance's endeavours to introduce new plants to this country has already been recognized by the Council having awarded him the Society's Large Silver Medal, yet I trust it will not be considered improper in me to indicate this in a more specific manner, by naming after that gentleman one of the most beautiful of the plants we owe to his exertions.

XIV. *On Two Species of Insects which are found injurious to the Pear Tree.* *By* Thomas Andrew Knight, *Esq. F. R. S. President.*

Read April 19, 1836.

The leaves of Pear Trees which are trained to walls, have sustained, during some years, much injury in many gardens, from the depredation of the larvæ of a very minute species of moth, the Tinea Clerckella of Linnæus: and I have been informed that it abounded in the Royal Gardens at Kew in the last summer. The Moth appears in the end of May and the beginning of June; and it is readily distinguished by the silvery whiteness of its wings, which are tipt lightly with brown, and by its small size, its length scarcely exceeding a single line. It is an extremely pretty little insect, and possesses so much activity, that it is difficult to obtain a living specimen of it. It probably deposits its eggs, or, perhaps, more properly, its spawn, upon the under surfaces of the leaves; and the larvæ, having there penetrated through the epidermis, feed upon the internal parenchymatous matter of the leaf. Brown and lifeless circular spots in consequence appear upon the leaves, such as an excess of heat would occasion; and I have known several gardeners who have supposed it to be caused by solar action. These lifeless spots enclose the larvæ of the Moth abovementioned, which do not exceed a line in length. Whenever the leaves of a Pear Tree contain many of these, the fruit does not acquire nearly its natural size, and it ripens without acquiring either sweetness or flavour.

This insect is an old inhabitant of our gardens: I first observed it half a century ago, but it appears latterly to have become much

more abundant. It greatly prefers some varieties of Pears to others; the Chaumontelle appears, amongst the varieties in my garden, its favorite, and the Glout Morceau that which it likes least. The Moth is, I believe, but little known, for Mr. Curtis, who was so kind as to give me the name of it, did not possess a specimen till he received one from me. My Pear Trees had sustained during many successive years so much injury from the depredation of this insect, and their fruit had in consequence become so defective in freshness and flavour, that I resolved to uproot the whole of them, if I failed to succeed in destroying or driving away the insects: but in the last summer I had the good fortune to obtain perfect success in driving them away by the means which I proceed to describe.

Early in the spring of the year, when the blossom buds of my Pear Trees were about the size of large peas, water, which held in suspension a mixture of lime and flower of sulphur and soot, in about equal portions, was thrown by an engine over the Pear Trees and the surface of the wall to which they were trained. I applied this mixture because I had observed, as I have stated in a former communication, that it had apparently prevented the appearance of blistered leaves upon my Peach and Nectarine Trees, though by what mode of operation I was then, as I still am, wholly at a loss to conjecture: but since the first application of it, I have not seen a single blistered leaf upon any tree to which it was applied. I, of course, distinguish blistered leaves from such as have been made to contract by the bite of the aphis.

The Moths appeared as abundant as in the preceding year; and I then caused my trees to be washed once in every week during a month, after I witnessed the first appearance of the Moth, with a weak infusion of tobacco in water: this mode of treatment proved successful, and the foliage of my Pear Trees, and some Plum Trees contiguous, escaped all injury. The Moths were, however, only

driven away; for the leaves of two Pear Trees which grew at some distance were almost wholly destroyed, and the foliage of the Medlar and Cherry Trees in the vicinity sustained a good deal of injury from them. Nearly all the leaves which contained any of the larvæ were collected and burned, and comparatively very few of the larvæ escaped; and I do not at all doubt but that by adopting the same measures next year, I shall succeed in securing my Pears from future injury.

There is another species of insect which frequently injures the Pear tree, whose depredations are less visible, and consequently less known to gardeners. It has greatly the appearance of an aphis, and is found dispersed over the under surface of the leaves whilst young, and is always immersed in a globule of honey; in their more mature state these insects are found congregated round the base of the buds, particularly those which are calculated to form blossom buds. In this, as in their first situation, they emit much honey, and the transmutation of the leaf bud into a blossom bud is prevented. A large number of humble bees and wasps are always attracted by the honey ejected by this insect, which will never fail to indicate its presence to the gardener. It is in size a little less than the black aphis usually seen upon the Cherry Tree, and its colour, when it is young, is a dull green with dotted lines of pale brown: and in its mature state its colour is dark brown, with transverse stripes of green across its back. The colour of the male, which is winged, is nearly black, except the upper part of the abdomen, which is a dull flame colour. It is (as Mr. Curtis informs me), the Psylla Pyri of Linnæus. I noticed it in the garden here about forty years ago, when it rendered all the crop of Pears perfectly worthless. I have subsequently pointed it out to gardeners in other situations; and I suspect that it often exists unnoticed, and greatly injures the quality of the Pear. I washed my Pear Trees with an infusion of tobacco in the spring, which appeared

to have destroyed the insects, but they appeared again in great numbers, and the frequent use of the engine did not prevent their doing considerable injury. Not improbably an infusion of the green leaves of either the Nicotiana tabacum, or N. rustica, which might have been obtained at a very small expence, would have destroyed or driven them off, but it did not occur to me to try it.

XV. *Notice of the most Remarkable Varieties of Fruits sent to the Society since* 1831. *By Mr.* Robert Thompson.

Apples.

On the 19th of September, 1831, Dr. Maclean, of Colchester sent two very valuable varieties of Seedling Apples, grown at Sudbury, and which had been raised by Dr. Allan Maclean; accompanied by the following account.

"The tree which produced the larger sort was ringed two years since, and produced only about half a dozen fruit on the branches beyond the ringed part. This year it yielded about two dozen on the same, but none on those below. The tree is very handsome; the stem or bark smooth, resembling the Crofton more than any other. I also send specimens of another Seedling resembling the Nonpareil which has been much admired. I have reason to believe that these trees were raised from pips of Apples fertilized with the pollen of other Apples, both of the choicest kind according to the plan recommended by the learned President of the Society. This was about ten or eleven years since."

The first mentioned sort has been called *Maclean's Favourite.* The fruit is about the size of a Royal Russet, and considerably resembling it in shape, broadest at the base, with an obtusely angular outline. Eye in a tolerably large cavity, wide, but partially closed by the segments of the calyx; stalk rather slender, about half an inch in length, deeply inserted. Skin in some places quite smooth and shining, and such places where exposed to the sun have a tinge of brownish red, interspersed with ferruginous spots; other parts are entirely covered with russet. Flesh yellowish, tolerably juicy, very sugary, rich and excellent. One of the finest dessert

apples known. In perfection in October; but from its firmness, and very sugary nature, it would probably keep for a considerably longer period.

The other, called the *Sudbury Beauty*, is a very handsome table Apple much resembling in appearance a well-grown Downton Apple, not only in size and form, but also in the colour and marks in the skin. Flesh rich and juicy, rather more yellow than that of the Downton; when tried in October, it proved excellent, appearing likely to keep for some time, and is beyond all doubt an excellent fruit. There is a great probability that the Golden Pippin has been one of its parents.

On the 18th of October, 1832, John Williams, Esq. of Pitmaston, sent some fruit of the Golden Pippin grown on the *Common Stock*, and on the *Siberian Crab Stock;* accompanied with the following remarks. "Walking through the garden of a friend in Worcestershire two days ago, some yellow ripe Golden Pippins took my eye; these were growing on a tree I recommended, three or four years ago, to be worked with the Golden Pippin, and which was a healthy stock raised from the Siberian Crab. The grafts were taken from an old Espalier, grafted on the Common Crab, in the same garden. The difference in the degree of ripeness of the fruit was most remarkable."

"When the truth of preconceived theory is confirmed by the result of actual experiments, it affords great satisfaction to the mind. I refer to my paper published some years ago,* in which I recommended the Golden Pippin Apple to be grafted on the Siberian Crab *Root and Stock;* I say root and stock, for some have absurdly regrafted the Siberian Crab obtained from nurseries which had been worked on the Common Apple or Crab Stock: of course this could have no effect."

* See *Horticultural Transactions*, Vol. VI. p. 539.

The Golden Pippins from the Siberian Crab Stock were firmer, more yellow, and richer, than those grown on the Common Stock.

Pears.

On the 6th of December, 1831, a very large Pear was communicated to the Society by John Rigden Neame, Esq. from the garden of Mrs. Chalmers of Feversham. This extraordinary production weighed, when gathered, 3 lbs. $3\frac{1}{2}$ oz., in the beginning of December, 3 lb. 2 oz., and in the end of the same month, 3 lb. It was then cut up, and found to be the *Uvedale's St. Germain;* but the usual pyramidal form of the sort was so filled up as to lead, at first, to the supposition of its being a Duchesse d'Angoulême. Grafts, however, obtained from the same tree, and worked upon a Uvedale's St. Germain in the Garden of the Society, have since afforded sufficient corroboration of their identity, from the exact similarity of the wood and leaves.

In October, 1832, specimens of the *Monsieur le Curé* Pear were received from M. Vilmorin of Paris, in order that they might be compared with the St. Lezin, to which the former had erroneously been made a synonym. It was found to resemble the St. Lezin only in size and form, and proved a very superior fruit to it, being, instead of a tough, stewing Pear, a valuable dessert one of first-rate quality. Fruit large, about six inches in length, pyramidal. Eye in a moderate depression with segments of the calyx long and diverging. Stalk about an inch in length, somewhat oblique. Skin pale brownish yellow with sometimes a tinge of red next the sun. Flesh melting, rich and juicy, cool and refreshing, not musky. It was found thus good on the 30th of November, after enduring the carriage from Paris; therefore its season of maturity may very probably be stated to be November and December. In a letter received from M. Vilmorin in January, 1835, the following note is given respecting it: "After repeated verification, the *Monsieur*

le Curé Pear, or *Monsieur*, as it is now abbreviated, or *Poire de Clion* (the name to be preferred) is decidedly different from the St. Lezin, and greatly superior to this last sort."

On the 4th of November, 1833, a box was sent to the Society by the late John Wynne Griffith, Esq. containing specimens of twenty-four sorts of Pears, from his garden at Garn in Denbighshire; with a statement that they were from grafts received from the Garden of the Society in 1830, worked on branches of four old trees, viz. Brown Beurré, Crassane, Autumn Bergamot and Jargonelle, which were growing against a south-west wall, and the grafts brought over to the south-east side. The sorts were all true to their names, and very well grown. From an account of the number of fruits produced, it appeared that upwards of ten dozens had been obtained in the second year after grafting, and more than thirty dozens in the third year, from the grafts on these four trees; a proof of the rapidity with which a supply of good Pears may be procured under favourable circumstances.

Grapes.

On the 9th of November, 1831, a bunch of *White Muscat of Alexandria* Grapes was received from John Williams, Esq. of Pitmaston, grown on the open wall, on a south-east aspect. A ligature of waxed string was tied tight round the stem in April; which was found nearly as beneficial as ringing, and less injurious to the future health of the tree.

On the 2nd of January, 1833, fruit of the *Charlesworth Tokay* Grape was received from the Hon. William Booth Grey. Bunch large, long and tapering, rather loose; the shoulders moderately strong. Berries oval, not quite so large as those of the Muscat of Alexandria, skin of a pale amber yellow, and thin for so late a Grape. Flesh moderately firm, juicy, very sugary and rich, with an exceed-

ingly agreeable muscat flavour. Seeds generally two in each berry, but sometimes none perfect. The foreign name of this excellent sort is not known at present, but will probably be discovered, and its history developed as the progressive investigation of the extensive collection in the Garden of the Society is proceeded with.

On the 24th of February 1834, the following communication was sent to the Society relating to the *Nice Black Cluster* Grape; fruit of which was subsequently received.

"The Nice Black Cluster, I have no hesitation in saying, if planted against southern walls facing any point between S. E. and S. W., or against the fronts of houses or trellised to balconies, will ripen in ordinary seasons at London by the end of September or beginning of October sufficiently for the purpose of making wine of the nature of Champagne, and much better than half the Champagne sold in London. But for this purpose I recommend to use the pure juice only, without any admixture of sugar and water, or brandy. It is also an excellent grape for a cool, late forcing house not being liable to rot, nor do the berries wither so much when kept late on the plant, as is the case with many other kinds; this is rather an unusual circumstance considering that it is not a fleshy grape. It is remarkably juicy, and the seeds readily separate in the mouth without trouble. I only gathered the last from my grapery three days ago and they were still very juicy, notwithstanding the dry heat and ventilation they were exposed to from the *daily* fire in the flue, made in order to prevent their rotting. By reference to the long article on Grapes cultivated in Burgundy, in Miller's Gardener's Dictionary, you will observe the finest Burgundy is made from a variety of the Auvernat Grape having its bunches formed with loose berries. But owing to the tenderness of the grape, planters in general, for the sake of quantity at the expence of quality, cultivate the more hardy sorts with crowded berries. Now I have

reason to believe my seedling grape is as hardy, with the advantage of loose berries, as the common crowded Auvernats; and for this reason I wish to have it tried in France."

The Bunches were loosely formed with regularly middle sized berries, which, from not being overcrowded, were thoroughly ripened and sugary; and on this account it seems highly deserving of cultivation.

Strawberry.

On the 5th of July 1831, fruit of *Myatt's Pine Apple* Strawberry was exhibited by Mr. Joseph Myatt, Manor Farm, Deptford. Fruit as large as the old Pine, oblong with a neck and having the calyx spreading or reflexed. Seeds numerous, regularly but not deeply imbedded. Flesh firm and juicy with a small core, and possessing a rich Pine Apple flavour. This sort, so highly deserving of cultivation, grows but shyly in many soils, and produces but sparingly. These defects will doubtless exclude it from very general cultivation; but for gentlemen's Gardens, its superior flavour renders it worthy of a place.

Gourds.

On the 21st of December 1831, a very large gourd, the *Potiron Jaune*, was presented for Exhibition by Mr. Carpenter from the Garden of the Rev. H. Wise, Offchurch, near Leamington. Its weight was 153 lbs; and was one of a crop weighing altogether 555 lbs. from the same Vine.

On the 21st. of October 1834, a Gourd of the same variety, but of a size still more enormous, was exhibited, from Lord Rodney. It was 8 feet in circumference, and weighed 212lbs.

XVI. *On the Grafting of Vines. By Mr.* William Gowans. *Communicated by the Horticultural Society of Glasgow.*

Read June 7, 1836.

The mode of grafting which I am now about to describe, if not altogether new, is at least so far as I am aware nowhere in practice.

I was first induced to try it from the following circumstances. The Glasgow Society having generally awarded prizes for the best of a number of kinds of grapes, I was for some years prevented from competing, from a want of the requisite varieties. I, therefore, applied to a friend in Ireland in the winter of 1833, and received from him three scions, one of them a highly praised variety. Desirous of having these matured as speedily as possible for the purpose stated, it struck me that if I could succeed in grafting them by the cuneiform mode, it would ensure their bearing much earlier than the usual inconvenient and tedious arch mode of grafting.

The plan which I adopted as most likely to ensure success, will be understood from the following description. In the month of February, 1834, having selected of the scion of which I am to speak, a portion with one eye, I cut it into the form of a wedge. For a stock I selected on a black Hamburgh vine a shoot of the preceding year's growth, about the same thickness as the scion, and cut it over a little above the second eye from the old wood. With a sharp knife, I cut it down the centre nearly to the old wood. Out of the centre I pared with a penknife as much as was necessary to make it fit the cut on the sides of the scion. I then inserted the scion with its eye opposite to that on the top

of the stock. I tied it up, and clayed it over in the usual way, with this difference, that I covered nearly the whole of the scion with the clay, leaving only a small hole for its eye. I tied a little moss over the clay, upon which I sprinkled a little water occasionally, to keep the whole in a moist state for some time.

Of the success of the plan I produced a proof to the Society in September last, viz. a bunch of grapes produced from a strong vigorous shoot of 22 feet of wood fully as well ripened as the rest of the wood on the same vine. And I can now (May, 1835,) add, that, having again commenced forcing, this shoot is fulfilling my highest expectations. It has broken into leaf fully as strongly as any other shoot on the same vine, and is shewing fruit. I have been equally successful in my other experiments on the same principle; not fewer than 22 out of 23 grafts of the present year have been attended with decided success; a number of them shew fruit, and two of them two bunches each; I am therefore convinced that vines may be grafted in this mode with as much success as apples or pears, and with a sufficient certainty of good bearing wood for the following season.

What I thought, and still think, of essential importance to success in this mode, is to leave the eye or young shoot on the top of the stock, and allow it to grow for a few days: when it should be cut off, leaving only one eye and one leaf to draw sap to the scion, till it be fairly united to the stock.

With regard to the time for grafting, I find that it will succeed pretty well when the stocks are about to break into leaf. But I think there is more certainty of success when the shoots of the stock, into which the grafts are to be inserted, have made 12 or 15 inches of new wood. For instance, the grafts which I made on the 25th of February this year, have not broken so freely, nor yet advanced so far, as those grafted a month after when the stocks had made about 15 inches of new wood. By this time the sap has

begun to flow freely; and the danger of the stocks suffering from bleeding is over. But indeed if vines are in good health, and thoroughly ripened, I find that there is no danger of their bleeding at any time.

The following may be stated as some of the more obvious advantages of this mode of grafting. Cuttings of vines may be brought during the winter from any distance with perfect safety and with little expense or trouble, any number of different sorts may be had in the same house without confusing it with plants: a practice which I consider to be as injurious as it is common; and the merits of new sorts, can be ascertained without loss of time.

I may here mention another mode of grafting vines hitherto unpractised so far as I know, but which may be introduced with great advantage, particularly when the saving of fruit-bearing wood is an object, should the graft fail. I was urged to this invention from the following circumstance. Foreseeing the necessity of making a number of grafts this season, perhaps to the loss of requisite fruit-bearing wood, I last year tried a graft upon two years old wood and was fully successful. The mode which I adopted is just a modification of the cuneiform mode, and may be termed the *Angular Cuneiform* mode. The eye of the scion is to be placed opposite to the shoot on the stock after the manner adopted in the simple cuneiform mode. If the graft succeed let the fruit-bearing shoot be cut off, to throw the sap into the scion. If the graft should not succeed you have still the fruit-bearing shoot without material injury having been done.

Cadder Garden,
April, 1835.

XVII. *Upon the supposed Absorbent Powers of the Cellular Points, or Spongioles, of the Roots of Trees, and other Plants.* *By* Thomas Andrew Knight, *Esq. F. R. S. President.*

Read May 17, 1836.

An opinion is very extensively, if not generally entertained, that the nutriment which trees and other plants derive from the soil in which they grow, is exclusively taken in by the cellular extremities of their roots, which, from their texture, have been called Spongioles; and which in their organization differ from other parts of the root in being totally without any alburnous or woody matter distinct from bark. But it is through the alburnum alone of trees, as I have proved by a great variety of experiments, and as is, I believe, generally admitted, that the ascending sap, under ordinary circumstances, passes up from their roots into their branches and leaves; and as this substance does not exist in the Spongiole, my attention was directed to an enquiry, whether the Spongioles possess the power of transmitting fluids, and, if such power were found to exist in them, through what peculiar channels such fluids pass up: and as these questions are necessarily interesting, and to some extent, in particular cases, may become important to the practical gardener, I communicate the result of my experiments.

Spongioles are obtainable in the most perfect state from large seeds, such as those of the common or French bean, which have been permitted to germinate by simply detaching them from the cotyledons; as they thus remain united to the caudex of the plant, and its bud and plumule. Many of these were obtained from the seeds of plants of several kinds, and subjected to various modes of

treatment in soils of different qualities; but all perished without a single plumule having expanded, or having apparently received any nutriment, either from the soil or other source. Yet the Spongioles, in these cases, must have contained greatly more living organizable matter, derived from their cotyledons, than the whole body of the seed of a very large majority of plants can possibly contain: but they were, I conclude, incapable of transmitting it into the plumules, owing to the want of alburnum.

I therefore believe my opinion, that Spongioles are imperfectly organized parts of the plant, which neither absorb from the soil, nor transmit fluids of any kind for the service of other parts of it, to be well founded; but alburnous matter is generated with great rapidity within them; and they become to a very great extent transmuted into perfect roots long before the growth of the stem or branches of the tree commences in the spring; and by these newly formed roots (but not by these exclusively) I conceive that nutriment is absorbed from the soil and sent up into the leaves, to be there converted into the true sap of the plant. I am aware that the above stated opinions are in opposition to those of many eminent physiologists, to which much deference is due: but I think that they have erroneously included within their Spongioles portions of alburnous fibre, a substance never found in the organ properly called a Spongiole.

The Althorp Crassane Pear.

Miss Drake, del. *E. Clark, sculpt.*

XVIII. *Observations on a Seedling Pear raised by* Thomas Andrew Knight, *Esq. called the Althorp Crasanne. By Mr.* Robert Thompson.

Read January 19, 1836.

The cultivation of fine dessert Pears in this country, before the introduction of the new Belgic varieties, was necessarily confined to walls; and, generally speaking, to have attempted otherwise to obtain perfect fruit of such varieties as the Old Colmar, St. Germain, and Crasanne, would have proved abortive. Whilst this was the case in regard to the Pear, fine varieties of the Apple, almost innumerable, were originated in Britain, possessing degrees of hardiness suitable to its various climates. It appears, therefore, remarkable, that so few successful attempts should have been made to obtain similarly hardy varieties of the Pear. Possibly the superiority of the Belgic varieties may have swept away the produce of many attempts to which the advancing spirit of Horticulture may have led, about the time of their introduction; and certainly a knowledge of these has tended to prevent the promulgation of some seedlings, which otherwise would have been sent out with fair claims to public favor. This has been the case with a large portion of those raised by the skill and indefatigable perseverance of the President of this Society, and which, in order to avoid adding to the multiplicity of varieties are not at all noticed in these Transactions.

Among those, however, which Mr. Knight has raised, and which will bear competition with the finest of the introduced varieties,

the *Althorp Crasanne* is one of the very best. It is described, from a standard, in the Second Series of these Transactions, Vol. 1. p. 106, from fruit of the first year of its production, in 1830. In the present season, Mr. KNIGHT has sent specimens in high perfection, both from standards and from a wall; and from one of the latter the accompanying drawing, by Miss DRAKE, has been made.

In the first notice of this variety, above alluded to, it was described as having much the appearance of the Crasanne, possessing all its richness, with less grittiness. This is so far correct; but as it has since been grown in greater perfection it has altered in form, and, therefore, it will be necessary to notice more particularly its general characters, whether grown on a wall or as a standard. The specimens from a wall were very large and obovate; the eye was in a moderately deep depression, with the segments of the calyx somewhat collapsing; the stalk usually less than an inch and a half in length, or sometimes considerably shorter, thicker than that of the Crasanne.* The skin was yellowish green, with a faint brownish blush next the sun, and some russet near the stalk. The flesh was white, melting and buttery, with very little grit, rich and excellent, but not equal to those from standards in point of high flavour. From a standard, the fruit was large, roundish-obovate, the eye was in a tolerably even-formed hollow, and open, with the segments of the calyx forming tubercles, inclining to collapse. The skin was greenish-brown, interspersed with russet-gray, not unlike in colour the Crasanne; but the stalk differs much, being only about half an inch, or an inch in length; whereas in the Crasanne it is one and a half, or two inches. The flesh is buttery, rich and very high flavoured. The season of this Pear is the end of October and November.

In mentioning this sort Mr. KNIGHT says, " as a dessert Pear,

* The general form of the fruit is considerably more globular and more approaching that of the Crasanne. T. A. K.

the Althorp Crasanne is to my taste the best; and its rose-water flavour will please where musk offends."

"The original tree of this variety, though it has been much pruned for grafts, has borne well in all the last six years, and I believe it to be greatly more hardy than any of the Belgic varieties, and not less hardy than the Swan's Egg. I have reason to believe that the sample sent and delineated was not a favourable one; for owing to the excessive wetness and coldness of the autumn, neither the Brown Beurré, the Marie Louise, the Forelle, nor Glout Morceau grown in my garden here were tolerable. I planted standard trees of the three above-mentioned Belgic varieties and of the Napoleon and Passe Colmar, in the situation where this Pear acquired its highest state of perfection, but none of them succeeded at all. Three of the largest of the Althorp Crasanne Pears, which grew upon a wall in my garden here last season, exceeded the plate by two and a half lines in width."

XIX. *On the cultivation of the Bignonia venusta. In a Letter to the Secretary. By Mr.* George Phillips *Gardener to the Misses* Trevor.

Read Dec. 1, 1835.

The Gardens Tingrith near Woburn,
November 30, 1835.

Sir,

We have at this place two strong plants of that most splendid hothouse climber the Bignonia venusta, planted in the back corner of the bark bed; they are now nine years old from cuttings, and have been planted out eight years. When first planted out we had two perforated boards at each corner to keep together the soil, which consisted of a mixture of turfy loam, leaf mould and peat; the boards soon decaying the roots got into the bark and at this time occupy about two cubic yards; since the plants have become strong we are very careful not to disturb their roots when renewing the bark, in which they seem very fond of rooting and which in the growing season is freely watered with manured water. They have flowered very freely every season according to the size of the plants; these last three years they have covered the whole house, a surface of 500 feet. We consider this, from its habit here, to be one of the best flowering climbers at present known in our stoves, of the easiest cultivation, and well deserving of a place in every hothouse in the country; unfortunately it is at present but little known, even among Gardeners. It generally continues in flower from the beginning of November to February; it is afterwards cut back to one stem of six feet in length, which is now nearly four inches in girth. From the point where it is cut back young shoots soon push out in abundance; three or four are selected for

training and the others taken off. If young plants are wanted this seems to be the most favourable season for propagation; when the shoots are from six to nine inches long they will readily strike root in any light soil in a bottom heat. The young plants may be grown to a large size, the first season by frequent shifting; they are fond of plenty of room for their roots.

I remain, Sir,

Your obedient Servant,

GEORGE PHILLIPS.

XX. *On the Cultivation of Alströmerias. In a Letter to the Secretary. By Mr.* W. Scott, *Gardener to* Charles Barclay, *Esq.* M.P. F.H.S.

Read February 2, 1836.

Sir, Bury Hill, December 5, 1835.

As the Alströmerias exhibited by Mr. Barclay, on the 7th of June 1834, at the Gardens at Chiswick, were so generally admired that the Society's Large Silver Medal was awarded for them, I trust a description of my mode of treating them, may not be unacceptable to the Members. When I first came to live at Bury Hill, in April, 1831, I found several varieties in small pots of the size generally termed sixties, which were suffering from being kept too moist, and Alströmeria Tricolor or Flos Martini, and Pulchella or Simsii, were planted in the border in front of the Stove. Being very partial to the genus although I had never seen any of the varieties before except Ligtu and Pelegrina, I began immediately to turn my attention towards them. Being well aware, from what I had seen of the two kinds with which I was acquainted, that they require rest for a few months in the course of the season, I removed all the plants I could find, (which as well as I can recollect were Hookeri, Pulchella, Pallida, Pelegrina, Acutifolia, Pelegrina alba, Psittacina, Edulis, Ligtu, and a variety from Mr. Nuttall, raised by him from Peruvian seeds, and which had never flowered here,) to a small pit in front of the Pine Stove, giving them no water till the earth about their roots got quite dry; as soon as they began to recover, I potted them in the size called forty-eights, and kept them then on a shelf against the back wall of the Greenhouse, about three feet from the top-lights; and although I lost Hookeri, Pelegrina alba, and edulis, I had the

satisfaction of seeing the others thrive much better than they had done the previous year. I also took up from the border in front of the stove, Tricolor and Pulchella, and gave them the same treatment. When the leaves began to decay, at the end of July or beginning of August I withheld water, and allowed the plants to rest until the beginning of November, 1832, when they again began to vegetate: I then repotted them, and gave them every encouragement, in rich mould composed of loam, rotten dung and leaf mould with a little sand; this I find to be the best compost for growing them in. As they filled their pots with roots I shifted them progressively to a larger size: and had in June, 1833, the pleasure of flowering the species from Mr. Nuttall and Pallida, for the first time since they had been at Bury Hill; and I succeeded in growing Tricolor to the height of two feet three inches well covered with flowers; none of my pots that season were larger than what are termed sixteens. When the flowering was over and the leaves were beginning to decay, I again resorted to the plan of drying or resting the plants till the following November; I afterwards gave them the same course of treatment as before; but as the roots had attained a greater degree of strength, the size of the pots was enlarged, until some of the stronger varieties were planted in the size No. six, in which they arrived at the state in which they were exhibited at the Society's Garden in June, 1834. During the time of growing, I keep them on a shelf or trellis, in front of the Greenhouse, having upright lights about five feet high, and I give them plenty of air, carefully avoiding the least application of heat, which would draw them up weak, cause the flowers to be much smaller, and very much injure their colours. By these means I have had them continue in good bloom for full four weeks.

I remain, Sir,

Your obedient servant,

WILLIAM SCOTT.

XXI. *On the Means of Destroying the Red Spider in the Melon Frame. By* Thomas Andrew Knight, *Esq. F. R. S. President.*

Read May 3, 1836.

The Red Spider is one of the most formidable enemies with which the gardener has to contend, and against which he is least well prepared with the means of defence. His peach and nectarine trees upon the open wall are often considerably injured by it; and the conservatory, the forcing-frame, and the stove, scarcely present a plant which is not subject to suffer from its attacks. When it appears upon trees growing upon walls in the open air, and wherever water can be abundantly applied without material injury to the plants, it is easily destroyed; but there are, I believe, comparatively few plants, which are not much injured by having the lower surfaces of the leaves much wetted. In a former Communication I stated the destructive effects upon the melon plant of the application of water to the under surfaces of the leaves, apparently owing to the cells of that surface of the leaf having absorbed the lighter fluid, in the manner pointed out by M. Dutrochet, and transmitted into the denser fluid, the vital sap of the plant.

The aversion of the Red Spider to sulphur, or its inability to live in the close vicinity of that substance, has long been known to gardeners; and the object of this Communication is only to point out a more efficient mode of employing it than has, I believe, hitherto been practised. The instrument which I use bears a very close resemblance to those employed in fumigating with tobacco, but it is filled with pieces of the wing feathers of pigeons or poultry, amongst which a small quantity of flowers of sulphur is

dispersed. The receptacle is then closed with a lid, the front surface of which is perforated with many small holes, through which the air impelled by the bellows passes, carrying with it a portion of flowers of sulphur. By shaking the bellows, the feathers are made to change their position, by which many successive portions of flowers of sulphur are made to escape, till the whole which the receptacle contains is expended.

I first employed this instrument in the last summer in my melon house, in which, upon some of my plants, I observed a large number of Red Spiders. After using it I noticed with a lens, in the web, an immensity of minute particles of sulphur, in company with a very large number of Red Spiders ; but upon examining my plants three days afterwards, I found the particles of sulphur alone remained, and that the Red Spiders had either died or marched off. I found no difficulty in causing many minute particles of sulphur to adhere to the under surfaces of the leaves of all my plants, and during the remainder of the summer I was not able to find a single Red Spider upon them.

The form of the instrument for melon plants growing in hotbeds requires to be considerably altered ; and the perforations for permitting the escape of the flowers of sulphur should be lateral, instead of being in the front of the lid ; that should be made slightly conic, and of less width than the receptacle, so as to come within it to a small depth ; by which means the whole of the flowers of sulphur that escapes will be impelled forwards. The apertures should be confined to one side of the lid, which should not sink wholly into the receptacle ; and through such apertures the flowers of sulphur will be made to escape below the level of the leaves of the melon in the common frame, and be dispersed over the under surfaces of its leaves.

I applied flowers of sulphur in several other cases, in the last summer and always with success; and I am applying it to my

peach house, and vinery, instead of water from an engine; and I have reason to believe with perfect success.

My friend Mr. WILLIAMS of Pitmaston, has perfectly succeeded in banishing the Red Spider from his melon house by causing sulphur to evaporate from the hottest part of his flues; but, I think, not without some ill consequences. His machinery is a good deal superior to mine, and his skill and science in no degree inferior; but his melons though very large, and apparently perfect, are generally much surpassed by mine in richness and flavour. When sulphur is made to evaporate, some uncombined acid flies off, and this Mr. Williams suspects (and I agree with him in opinion) to operate injuriously upon the health of his plants. It seems probable that the same uncombined acid would cause the flowers of sulphur to operate injuriously, but though I have often applied it in large quantities, I never witnessed any ill effects.

TRANSACTIONS

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It is likewise necessary, on this occasion, to remark, that it is an established rule of this Society, to which they will always adhere, never to give their opinion, as a body, upon any subject, either of Nature or Art, that comes before them. And therefore the thanks which are proposed from the Chair, to be given to the Authors of such Papers as are read at the General Meetings, or to the Persons who send fruits, or other vegetable productions, or exhibit Inventions of various kinds to the Society, are to be considered in no other light than as a matter of civility, in return for the respect shewn to the Society by these communications.

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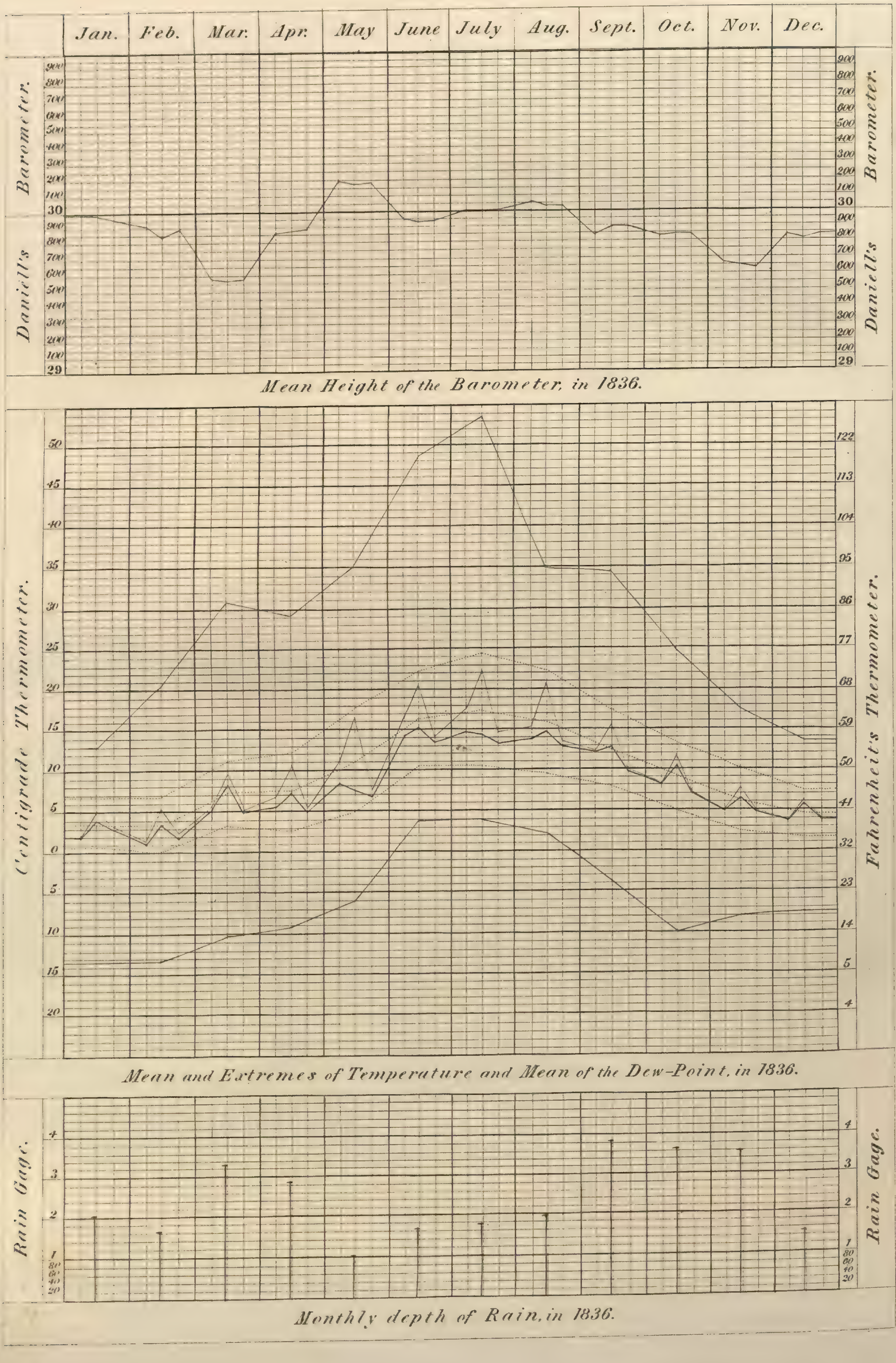


Mean Height of the Barometer, in 1836.

Mean and Extremes of Temperature and Mean of the Dew-Point, in 1836.

Monthly depth of Rain, in 1836.

XXII. *Journal of Meteorological Observations made in the Garden of the Horticultural Society at Chiswick during the year* 1836. *By Mr.* Robert Thompson.

This Journal has been kept on the same plan as the preceding one, the Centigrade Thermometer being substituted by order of the Garden Committee, for that of Fahrenheit. The averages are, however, also given according to the latter. When the temperature is below zero of the Centigrade Scale, the degrees have the sign (—) prefixed.

JANUARY.

	1836.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	F.	1	30.388	0	0	—	Snowing	30.431	—2	—2	—	Snowing	30.363	—4.5	—4.5	—	Slightly Clouded
	S.	2	—.725	—9	—9	—	Severe Frost	—.733	—3	—3	—	Overcast	—.672	—1.5	—1.5	—	Snowing
	S.	3	—.553	0.5	0.5	—	Thawing	—.514	4.5	4.5	—	Hazy	—.410	6	6	—	Cloudy
○	M.	4	—.283	6.5	6.5	—	Rain	—.269	9	9	—	Cloudy	—.241	8	8	—	Stormy
	T.	5	—.271	7	7	—	Fine	—.271	10	10	—	Very Fine	—.263	9	9	—	Overcast & Fine
	W.	6	—.272	6.5	6.5	—	Hazy	—.219	8.5	8.5	—	Overcast	—.137	6.5	6.5	—	Ditto
	Th.	7	29.985	2	2	—	Overcast	29.948	3	3	—	Drizzly	29.978	4	4	—	Ditto
	F.	8	30.004	4.5	4.5	—	Ditto	30.014	5	5	—	Hazy	30.167	1	2	—	Clear
	S.	9	—.025	—2	—2	—	Frosty&Foggy	29.988	0.5	0.5	—	Ditto	29.895	.5	1.5	—	Cloudy
	S.	10	29.680	—1	—1	—	Stormy	—.523	—0.5	—0.5	—	Ditto and Cold	—.229	1.5	1.5	—	Snow
☾	M.	11	—.334	—0.5	—0.5	—	Overcast	—.343	2	2	—	Thawing	—.233	3	3	—	Heavy Rain
	T.	12	—.488	—2.5	—2.5	—	Sharp Frost	—.490	2	2	—	Clear	—.700	—2.5	—2.5	—	Clear
	W.	13	—.831	—2.5	—2.5	—	Ditto	—.916	3.5	3.5	—	Cloudy	—.976	3.5	3.5	—	Cloudy
	Th.	14	—.971	5.5	5.5	—	Cloudy, windy	—.930	9.5	9.5	—	Ditto	—.698	9	9	—	Windy
	F.	15	—.505	4.5	4.5	—	Heavy Rain	—.531	5.5	0	5.5	Ditto	—.854	2	0	2	Do. & Clear
	S.	16	30 164	—0.5	—0.5	—	Clear & Frosty	30.250	3	—0.5	3.5	Clear and Fine	30.306	—2	—2	—	Clear
	S.	17	—.332	0	0	—	Ditto	—.330	5	3	2	Clear	—.427	—1.5	—1.5	—	Ditto
●	M.	18	—.295	1.5	1.5	—	Cloudy & Cold	—.198	4.5	3	1.5	Overcast	—.037	7	7	—	Cloudy
	T.	19	—.288	1	1	—	Fine	—.366	2.5	1	1.5	Dry Haze	—.389	—4	—4	—	Clear
	W.	20	—.328	0	0	—	Frosty Haze	—.266	5	5	—	Overcast	—.140	3.5	3.5	—	Overcast
	Th.	21	29.936	1	1	—	Fine	29.837	4.5	3.5	—	Ditto	29.694	4 5	4.5	—	Clear
	F.	22	— 574	6.5	6.5	—	Slight Rain	—.612	9	9	—	Cloudy	—.669	7	6	1	Slightly Clouded
	S.	23	—.463	11	11	—	Boisterous	—.603	12	10	2	Boisterous	—.927	7.5	6	1.5	Clear& windy
☽	S.	24	30.061	5.5	5.5	—	Fine	30.071	10	7	3	Very Fine	30.205	5	5	—	Overcast
	M.	25	—.385	3.5	3.5	—	Ditto	—.409	7.5	7	1.5	Ditto	—.407	2.5	2.5	—	Clear & Fine
	T.	26	—.273	4	4	—	Overcast & do.	—.185	7	5	2	Overcast	—.137	3.5	2	1.5	Ditto
	W.	27	30.099	5.5	5.5	—	Overcast	—.062	7	6.5	0.5	Fine	29.907	8	6	2	Stormy
	Th.	28	29.811	5.5	5.5	—	Fine	29.718	10	10	—	Slight Rain	—.476	8.5	8	0.5	Windy
	F.	29	—.555	1.5	—1.5	3	Clear & Cold	—.485	6	4	2	Fine but Cold	28.978	2	2	—	Cloudy
	S.	30	—.099	1	0	1	Ditto & Frosty	—.230	6	4	2	Ditto	—.642	1.5	0	1.5	Clear
	S.	31	—.523	2	2	—	Cold Rain	—.365	275	7.5	—	Rain	—.324	5	5	—	Overcast
	Cent.		29.980	2.21	2.08	0.13		29.973	5.29	4.42	0.87		29.951	3.50	3.19	0.31	
	Fah.			35.97	35.74	0.23			41.52	39.96	1.56			38.30	37.74	0.56	

JANUARY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	—1	—10.5	—1	—13.5	E	Brisk		The year commenced with a more intense frost than had been experienced since the 2nd of February 1831; the Thermometer in the shade being as low as (—10°.5 Cent,) or nearly at 13°, Fahr., and the radiator nearly at 7° of the latter. This degree of cold was rendered more sensible by the force of a brisk East wind. On the 2d the wind changed and a thaw commenced, as is frequently the case immediately after a frost becomes suddenly intense, and the 4th and 5th were, with one exception, the warmest days and nights of the month. The mean temperature was above the average, as was also the amount of rain. Of the latter a large quantity fell on the night of the 11th. The evening of the 30th was clear, without a single cloud, and a small halo appeared round the moon. Next morning and most part of the day was rainy.
2	—1	—4	—1	— 4.5	S	Little	.06	
3	7	2.5	7	1.5	SW	Ditto	.02	
4	10.5	7.5	10.5	5.5	——	Brisk		
5	11.5	6	13	4	——	Little		
6	8.5	—1.5	8.5	— 3	S	Ditto		
7	5.5	3	5.5	— 0.5	——	Ditto		
8	5.2	—1.2	5.5	— 3.5	SE	Ditto		
9	1.5	—0.5	1.5	— 1	E	Ditto		
10	1	—1.5	1	— 3	——	Brisk		
11	3.5	—2	3.5	— 4.5	S	Little	.83	
12	3.5	—2.5	4.5	— 5.5	——	Ditto		
13	5	1.2	5.5	0	——	Ditto	.01	
14	9.5	5	10	4	SW	Brisk	.27	
15	7.2	—0.5	8	— 4	W	Ditto	.01	
16	5	—2	7.5	— 9.5	NE	Little		
17	6.7	—1.5	8	— 6.5	W	Ditto		
18	7.5	0.5	8	— 4	——	Brisk		
19	5	—4	7.2	— 8	NE	Little		
20	6	1.5	6	— 3.5	S	Ditto		
21	6.5	4	6.5	2.2	——	Brisk	.01	
22	11.5	7	12	5	——	Ditto	.03	
23	12.5	6	13	3	——	Strong		
24	10.5	3	12	— 2	SW	Little		
25	8.5	0.5	10	— 3	S	Ditto		
26	10	4	10	— 0.5	SW	Ditto		
27	8.2	5	10	2	——	Ditto	.02	
28	10.2	2	12.7	— 1	——	Ditto	.05	
29	6.5	0.5	11.5	— 3.2	W	Brisk	.32	
30	7.5	—0.5	9.5	— 6	——	Ditto	.06	
31	10	3.5	1.5	0	SW	Ditto	.32	
Cent	6.76	0.98	7.33	—3.49			2.01	
Fah.	44.17	33 76	45.19	25.72				

Mean Pressure from the 3 daily observations 29.968 inches Fahr.
—— Temperature ..... Ditto ..... 3°.66 or 38.58
—— Dew Point ..... Ditto ..... 3°.23 — 37.81
—— Degree of Dryness ... Ditto ..... 0.43 — 0.77
—— Degree of Moisture .. Ditto ..... .985
—— Force of Vapour .... Ditto ..... .270 inch.
Least observed degree of Moisture ..... .715
Maximum Temperature in the Shade .... 12°.5 or 54.50
Minimum Temperature in ditto ..... —10°.5 — 13.10
Maximum Temperature in the Sun ..... 13°.0 — 55.40
Minimum of Terrestrial Radiation ..... —13°.5 — 7.70
Mean Temperature of external Air ..... 3°.87 — 38.96

WINDS.

North.....0 days.	N. East.....2 days.
South.....11 ..	S. East.....1 ..
East.....3 ..	N. West.....0 ..
West.....5 ..	S. West.....9 ..

31 days.

Amount of Rain..... 2.01 inches.

FEBRUARY.

		Morning.					Noon.					Night.				
1836.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
M.	1	29.345	3	3	—	Slightly Overcast	29.347	7.2	4	3.2	Fine	29.312	2	2	—	Slightly Clouded
○ T.	2	28.907	2	2	—	Hazy	28.801	4	4	—	Rain	28.668	3	3	—	Ditto
W.	3	—.937	2	2	—	Rain	29.118	4	4	—	Ditto	29.456	2	2	—	Stormy Rain
Th.	4	29.764	3	3	—	Stormy & Wet	—.932	2.5	2.5	—	Ditto	30.176	3	3	—	Ditto
F.	5	30.227	3	3	—	Overcast	30.206	3	3	—	Hazy & Cold	—.134	1	1	—	Cloudy
S.	6	—.027	2.5	2.5	—	Slight Rain	—.015	8.5	8	0.5	Very Fine	—.038	3	0	3	Clear
S.	7	29.826	5	5	—	Drizzly	29.849	8.5	4	4.5	Cloudy	29.964	8.5	8.5	—	Cloudy
M.	8	30.095	1.5	1.5	—	Hazy	30.035	7.5	7.5	—	Overcast	—.911	9	9	—	Cloudy & Fine
T.	9	29.937	8	8	—	Cloudy	29.972	11	10	1	Cloudy & Mild	30.065	8.5	8.5	—	Ditto
☾ W.	10	—.938	7	7	—	Fine	—.815	10	10	—	Showery	29.877	2.5	2.5	—	Clear
Th.	11	30.101	2.5	0	2.5	Clear & Cold	30.227	4.5	—0.5	5	Clear and Cold	30.389	0	—2	2	Ditto
F.	12	—.190	2.5	0	2.5	Bleak & Cold	—.104	9	6	3	Windy	—.250	4	3	1	Ditto
S.	13	—.409	—2	—2	—	Sharp Frost	—.427	5	2	3	Fine	—.429	5	4	1	Cloudy
S.	14	—.446	5.5	5.5	—	Fine	—.455	10	7	3	Ditto	—.506	3	3	—	Clear
M.	15	—.527	—2	—2	—	Clear & Frosty	—.506	9.5	3	6.5	Very Fine	—.483	0	0	—	Ditto
● T.	16	—.399	2.5	2.5	—	Sharp Frost	—.288	7	7	—	Overcast	29.909	7	7	—	Stormy Rain
W.	17	29.931	—0.5	—5	4.5	Clear & Windy	29.902	3	—2	5	Clear but Cold	—.877	3.5	3.5	—	Ditto
Th.	18	30.080	1.5	1.5	—	Cold N. Wind	30.162	4.5	—3	7.5	Cold & Windy	30.312	—0.5	—4	3.5	Ditto
F.	19	—.335	0	—5	5	Cold & Dry	—.327	3	—3	6	Fine but Cold	—.376	0	—5	5	Cloudy
S.	20	—.450	—2.5	—2.5	—	Sharp Frost	—.458	2	2	—	Clear	—.474	—4	—4	—	Clear
S.	21	—.407	—5	—5	—	Ditto	—.361	4.5	2.5	2	Ditto	—.218	1.5	1.5	—	Cloudy
M.	22	—.045	2.5	2.5	—	Slight Rain	29.946	7	7	—	Overcast	29.837	3.5	2.5	1	Ditto
T.	23	29.700	0.5	0.5	—	Slight Frost	—.636	6 5	6.5	—	Cloudy	—.603	0	0	—	Overcast
☽ W.	24	—.537	0.5	0.5	—	Overcast	—.342	7	5	2	Very Fine	—.160	3.5	2	1.5	Ditto
Th.	25	—.098	—1.5	—1.5	—	Frosty	—.068	5	—1	6	Ditto	—.096	—2.5	2.5	—	Clear
F.	26	28 996	0.5	0.5	—	Sleet	28.980	2.7	2.7	—	Rain	28.986	1.5	1.5	—	Rain
S.	27	—.950	1.5	1.5	—	Overcast	29.015	2.5	2.5	—	Drizzly	29.177	2	2	—	Cloudy & Fine
S.	28	29.316	0	0	—	Hazy	—.326	4	2	2	Cloudy	—.379	2	2	—	Ditto
M.	29	—.488	2	2	—	Ditto	—.508	4	4	—	Overcast	—.530	2	2	—	Ditto
Cent.		29.910	1.56	1.06	0.50		29.828	5.75	3.68	2.07		29.848	2.55	1.93	0.62	
Fah.			34.80	33.90	0.90			42.35	38.62	3.73			36.59	35.47	1.12	

FEBRUARY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	2	1.5	12.2	— 2	SW	Brisk	.01	On the 2nd the Barometer was lower than had been observed for the last 10 years, and, which is also remarkable, with an easterly wind. The fall of rain, though considerable, was not proportionally great. Of course the temperature here was above freezing; but in the country there was a deep fall of snow, and the storm was so excessively violent that the mails were in many instances obstructed by it. Vegetation, which had been much retarded by the very general absence of sun in the preceding month, advanced but little in this, owing to the same cause in conjunction with a temperature 3° short of the mean.
2	4.5	2.5	4.5	1	E	Little	.48	
3	4.5	1.2	4.5	0	N	Ditto	.34	
4	3.5	3	3.5	2	NE	Brisk	.10	
5	4.5	0	4.5	— 2.5	——	Ditto		
6	11	3	16.5	— 2	SW	Little	.01	
7	10	0.5	14.5	— 5	NW	Ditto	.03	
8	9.5	6	10	6	SW	Ditto	.01	
9	11	7.7	14	5	——	Brisk		
10	10.5	2.5	13	— 0.5	——	Ditto	.10	
11	5.5	—0.5	9.5	— 5	NW	Ditto		
12	9.5	—3.2	13.5	—10	W	Strong		
13	8	2	15.7	— 2	SW	Little		
14	10	—2.2	15.5	— 7.5	W	Ditto		
15	12	—3 5	20.5	—10	SW	Ditto		
16	9	0	20	— 2	——	Ditto		
17	9	2	6.7	— 3.5	N	Strong	.02	
18	5	—0.5	9.5	— 2	——	Ditto		
19	3.2	—4.7	11.5	—12.2	——	Brisk		
20	4	—7.2	12.2	—13.5	E	Little		
21	5.5	2.2	12.8	— 4.4	SW	Ditto		
22	7.5	—2	10	— 7.8	——	Ditto		
23	11	—3	17	— 9.5	——	Ditto		
24	8	—1.3	13.3	— 6.5	S	Ditto		
25	7	—3.3	15.6	—11	SW	Ditto		
26	3	0.7	3	— 1	E	Brisk	.46	
27	3	—1	4.7	— 5.5	SW	Little	.01	
28	4.5	0	6.7	— 1	NW	Ditto	.04	
29	1.5	1.5	10	— 2.3	N	Ditto		
Cent	6.80	—0.07	11.20	—3.95			1.61	
Fah.	44.24	31.88	52.16	24.89				

Mean Pressure from the 3 daily observations	29.862	inches.	Fahr.
—— Temperature ..... Ditto	3°.28	or	37.90
—— Dew Point ..... Ditto	2°.22	—	35.99
—— Degree of Dryness .... Ditto	1°.06	—	1.91
—— Degree of Moisture .. Ditto	.943		
—— Force of Vapour .... Ditto	.247	inch.	
Least observed degree of Moisture	.640		
Maximum Temperature in the Shade	12°.0	or	53.6
Minimum Temperature in ditto	—7°.2	—	19.4
Maximum Temperature in the Sun	20°.5	—	68.90
Minimum of Terrestrial Radiation	—13°.5	—	7.70
Mean Temperature of External Air	3°.36	—	38.04

WINDS.

North.....	5 days	N. East.....	2 days
South.....	1 ..	S. East.....	0 ..
East.....	3 ..	N. West.....	3 ..
West	2 ..	S. West.....	13..

29 days.

Amount of Rain ..... 1.61 inch.

MARCH.

		Morning.					Noon.					Night.				
1836.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
T.	1	29.261	4.5	4.5	—	Cloudy	29.121	8	8	—	Overcast	28.996	6	6	—	Stormy
W.	2	—.472	5	3	2	Clear	—.542	10.5	5.5	5	Fine	29.578	6.5	6.5	—	Cloudy & Fine
○ Th.	3	—.672	6.5	6.5	—	Overcast	—.717	9.5	9.5	—	Showery	—.271	2	2	—	Slightly clouded
F.	4	—.730	4.5	4.5	—	Rain	—.741	10	10	—	Cloudy	—.505	8.5	8.5	—	Rain,& Windy
S.	5	—.501	5.6	5.6	—	Fine	—.457	10.5	10	0.5	Fine	—.450	5	5	—	Clear
S.	6	—.338	5.5	5.5	—	Rain	—.192	9	9	—	Rain	—.271	6	6	—	Ditto & Fine
M.	7	—.419	3	3	—	Overcast	—.447	10	10	—	Cloudy & Fine	—.445	0.5	0.5	—	Ditto
T.	8	—.412	3	3	—	Rain	—.422	4	4	—	Rain	—.518	3.5	3.5	—	Slightly clouded
W.	9	—.498	0	0	—	Frosty	—.398	8.5	6	2.5	Fine	—.208	4	4	—	Drizzly
☾ Th.	10	—.408	5	5	—	Hazy	—.417	8.5	8.5	—	Cloudy&damp	—.205	6	6	—	Ditto
F.	11	—.116	7	7	—	Fine	—.152	11	4	7	Fine	—.238	5.5	2.5	3	Clear
S.	12	—.284	7.2	7.2	—	Showery	—.357	10	10	—	Stormy showers	—.377	6	6	—	Stormy & Wet
S.	13	—.605	5.5	3	2.5	Clear	—.673	10	4	6	Fine	—.614	7	4	3	Fine
M.	14	—.234	10	10	—	Stormy & Wet	—.280	7.5	7.5	—	Heavy Rain	—.364	5.5	5	0.5	Ditto
T.	15	—.083	5.2	5.2	—	Rain	—.286	10	3	7	Stormy	—.495	4.5	2	2.5	Ditto
W.	16	—.736	3	3	—	Clear	—.853	7	6	1	Very Fine	30.177	3	2	1	Ditto
● Th.	17	—.991	8.5	8.5	—	Overcast, windy	30.000	11	11	—	Cloudy	—.255	10	10	—	Stormy
F.	18	30.305	10.5	10.5	—	Hazy	—.460	15.5	15.5	—	Do. & Fine	—.404	7.5	7.5	—	Clear and Fine
S.	19	—.293	8	8	—	Ditto	—.204	17.5	10	7.5	Very Fine	—.142	6.5	6.5	—	Overcast
S.	20	—.182	8.5	8.5	—	Fine	—.199	18	14	4	Ditto	—.226	9	9	—	Cloudy & Fine
M.	21	—.136	7.5	7.5	—	Hazy	—.045	12	10	2	Slight Haze	29.987	10	9	1	Ditto
T.	22	29.932	9	8	1	Cloudy	29.916	11	11	—	Drizzly	—.943	7.5	7.5	—	Ditto
W.	23	—.755	5	5	—	Slight Haze	—.648	10.5	10.5	—	Slight rain	—.561	7.5	7.5	—	Windy
Th.	24	—.563	5	5	—	Fine	—.568	8.5	5	3.5	Fine	—.523	5	5	—	Clear & Ditto
☽ F.	25	—.033	7	7	—	Heavy rain	28.980	9	9	—	Stormy showers	—.195	3	1	2	Ditto
S.	26	—.254	4	1	3	Cold & windy	29.390	8	8	—	Ditto	—.513	0.5	—0.5	1	Ditto
S.	27	—.873	0.5	0.5	—	Frosty	—.576	11	3	8	Fine	—.321	3	3	—	Overcast
M.	28	28.702	4	4	—	Stormy with rain	28.655	6.5	6.5	—	Heavy rain	—.103	2.5	2.5	—	Stormy & Wet
T.	29	29.560	4	2	2	Clear & Cold	29.649	7.5	7.5	—	Rain	—.784	5	4	1	Fine
W.	30	—.744	8	8	—	Overcast	—.424	9	9	—	Heavy rain	—.561	8	8	—	Stormy & Wet
Th.	31	—.692	7.5	6	1.5	Clear & Cold	—.785	10	10	—	Stormy showers	—.898	3	2	1	Clear & Windy
Cent.		29.573	5.72	5.34	0.38		29.563	9.96	8.22	1.74		29.584	5.22	4.71	0.51	
Fah.			42.29	41.61	0.68			49.92	46.79	2.33			41.39	40.47	0.92	

MARCH.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	10	4·5	12.2	1.2	S	Little	.22	This was a very wet month. The dry days were only 4, those from the 18th to the 21st, inclusive. The amount of rain was nearly 2 inches above the usual mean. The barometer averaged lower, than for the last 10 years, with the exceptions of April 1829 and Feb. 1833; and its extreme lowest, on the 28th at noon, was 28.655 inches, the greatest depression hitherto observed at the garden. The wind, frequently strong, was either from a South, South West, or West direction during 29 days. The temperature was above the mean, yet vegetation made very slow progress owing to the continued obscurity of the Solar rays. The 12th, 14th and 15th were very boisterous.
2	12	5	17	2.2	SW	Brisk	.02	
3	9·2	1.3	10.5	—2.7	——	Little	.12	
4	11	5·5	17	2.5	——	Ditto	.04	
5	11	0.5	17	—3.6	S	Brisk	.21	
6	9·5	—1	9·5	—5	——	Ditto	.04	
7	10.5	—1	1.5	—5.2	SW	Little	.01	
8	7·7	—1	1.3	6	NW	Ditto	.15	
9	9	2.5	12	0	S	Ditto	.09	
10	10	5·5	14	4	SW	Ditto	.07	
11	11.5	5·5	16	2	——	Strong	.07	
12	11.5	3·7	16	0.5	S	Ditto	.14	
13	11	6.3	17	4·5	SW	Brisk	.14	
14	9	4	10	2	——	Ditto	.47	
15	11	1.5	16	—2.2	——	Strong	.01	
16	10	2.2	16	—2.2	W	Brisk	.05	
17	11.5	9·5	12	8.5	SW	Strong	.01	
18	16.5	6.3	22.8	4·5	W	Little		
19	20.6	2.7	30.7	—1	S	Ditto		
20	20.5	6.8	29·5	5	SW	Ditto		
21	11.5	8	13	4·5	——	Little		
22	11	2	13	—1	——	Ditto	.02	
23	10.5	3.2	11.8	0	——	Ditto	.08	
24	12	4·5	16	1	——	Brisk	.11	
25	10.5	2	14	—0.5	W	Strong	.07	
26	8.5	—3·5	13	—10.2	S	Ditto	.02	
27	10.7	1·7	20	1	——	Brisk	.37	
28	7.2	2.5	9	—0.5	E	Ditto	.34	
29	10	4·5	14·5	0	SW	Strong	.12	
30	13	6.2	14·5	3·7	——	Ditto	.28	
31	10	2.2	15·4	—2	W	Ditto	.03	
Cent	11.22	3·37	14·59	0.16			3·30	
Fah.	52.19	38.06	58.26	32.28				

Mean Pressure from the 3 daily observations 29·573 inches. Fahr.

—— Temperature	Ditto	6°.97	or	44·54
—— Dew Point	Ditto	6°.09	—	42.96
—— Degree of Dryness ...	Ditto	0°.88	—	1.58
—— Degree of Moisture ..	Ditto	·943		
—— Force of Vapour	Ditto	·315 inch.		
Least observed degree of Moisture		.609		
Maximum Temperature in the Shade		20°.6	or	69.08
Minimum Temperature in ditto		— 3°·5	—	25·70
Maximum Temperature in the Sun		30°.7	—	87.26
Minimum of Terrestrial Radiation		—10°.2	—	13.64
Mean Temperature of External Air		7°.29	—	45.12

WINDS.

North.....	0 days.	N. East.....	0 days.
South	8 ..	S. East.....	0 ..
East	1 ..	N. West.....	1 ..
West.....	4 ..	S. West	17 ..

31 days.

Amount of Rain..... 3.30 inches.

APRIL.

			Morning.				Noon.					Night.				
1836.		Days.	Barom.	Hygrometer.		Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
○	F.	1	29.826	5	1 6	Dry Haze	29.704	4.5	4.5	—	Sleet	29.361	1	1	—	Stormy with rain
	S.	2	—.528	2.5	2.5 —	Cold & Windy	—.629	7	2	5	Fine but Cold	—.833	2.5	2.5	—	Cloudy
	S.	3	30.003	5	0 5	Cloudy & Cold	30.044	7.5	3.5	4	Bleak & Cold	30.335	1.5	1.5	—	Clear
	M.	4	—.412	2.5	2.5 —	Clear	—.399	7	3	4	Fine	—.364	0	0	—	Ditto
	T.	5	—.242	3.5	3.5 —	Slight Haze	—.139	11	6	5	Cloudy & Do	—.161	5	5	—	Rain
	W.	6	29.931	6.5	6.5 —	Rain	29.913	11	11	—	Ditto	29.793	5.5	5.5	—	Cloudy
	Th.	7	—.431	6	6 —	Ditto	—.263	11	11	—	Rain	—.134	2.5	1.5	1	Clear
☾	F.	8	—.034	8	8 —	Ditto	—.081	11.5	11.5	—	Cloudy	—.251	5	5	—	Cloudy
	S.	9	—.334	5.5	5.5 —	Ditto	—.351	7.5	7.5	—	Rain	—.484	5	5	—	Ditto and Fine
	S.	10	—.569	7	7 —	Fine	—.584	11	7	4	Fine	—.743	7	7	—	Ditto
	M.	11	—.737	6	6 —	Cold Haze	—.759	8.5	7	1.5	Overcast	—.765	4	4	—	Clear
	T.	12	—.795	7	7 —	Overcast	—.796	10	10	—	Rain	—.848	8	8	—	Overcast
	W.	13	—.846	10	8 2	Ditto	—.784	15	12	3	Cloudy	—.846	10	7	3	Ditto
	Th.	14	30.005	7.5	7 0.5	Do. and Cold	30.022	10	10	—	Slight Rain	30.089	12.5	10	2.5	Ditto and Fine
●	F.	15	—.150	10	10 —	Slight Rain	—.187	12	10	2	Overcast	—.208	4	4	—	Clear & Fine
	S.	16	—.200	4.5	4.5 —	Foggy	—.145	12.5	4	8.5	Fine	—.101	9	8	1	Overcast & Do.
	S.	17	—.146	6	6 —	Rain	—.146	8	8	—	Cloudy & Cold	—.102	7.5	7.5	—	Clear and Do.
	M.	18	—.133	7.5	7.5 —	Drizzly	—.121	12	12	—	Fine	—.119	7.5	6	1.5	Overcast
	T.	19	—.142	9	6 3	Fine	—.106	12.5	9	3.5	Ditto	—.095	8	8	—	Clear
	W.	20	—.010	10 5	9.5 1	Ditto	29.940	14	9	5	Cloudy	29.899	8	8	—	Rain
	Th.	21	29.943	8.5	8.5 —	Ditto	—.944	14	5	9	Very Fine	—.912	8	7	1	Overcast & Fine
	F.	22	—.806	10	10 —	Rain	—.855	16	7	9	Ditto	—.971	7	5.5	1.5	Clear and Do.
	S.	23	—.908	10.5	10.5 —	Ditto	—.843	11	11	—	Rain	—.878	7.5	7.5	—	Overcast & Do.
D	S.	24	—.707	6 5	6.5 —	Ditto	—.729	10	10	—	Ditto	—.973	5.5	5.5	—	Stormy
	M.	25	30 144	7.5	6 1.5	Fine	30.142	17.5	8	—	Very Fine	30.133	5	5	—	Slightly clouded
	T.	26	—.134	10	4 6	Ditto	—.043	12	5	7	Cloudy	29.867	5	3.5	1.5	Stormy
	W.	27	29 806	6.5	6.5 —	Cloudy & Cold	29.812	8.5	5	3.5	Do. and Cold	—.992	2	2	—	Clear & Windy
	Th.	28	—.968	6.5	6.5 —	Clear	—.869	12	12	—	Overcast	—.889	3.5	3.5	—	Fine
	F.	29	—.926	3	—4 7	Do. and Cold	—.900	7	—6	13	Cold & Dry	—.844	0	—1.5	1.5	Clear & Cold
	S.	30	—.807	4	0 4	Ditto	—.768	9.5	—1	10.5	Cloudy	—.766	3	2	1	Ditto
Cent.			29.860	6.75	5.55 1.20		29.867	10.70	7.45	3.25		29.891	5.33	4.81	0.52	
Fah.				44.15	41.99 2.16			51.26	45.41	5.85			41.59	40.66	0.93	

APRIL.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	7·5	0.8	11.2	—2	SE	Little	.76	This month was wet, and also cold for the period of the season. The mean temperature advanced only a fraction of a degree from that of the preceding month; the nights were, on the whole, colder, and of these, the coldest was as late in the month as the 29th, the thermometer being then at 27½°, Fahr. and the radiator at nearly 15°, Fahr. Fruit trees, such as Pears, Plums and Cherries, were only in blossom at the time, being a fortnight later than usual. Many of the finest blossoms were in consequence destroyed.
2	8	2	15	—2.3	W	Brisk	.02	
3	9	—1	14	—4.5	N	Strong	.07	
4	10.5	—2.5	20	—9	——	Little		
5	12.3	4.3	20	2.5	SW	Ditto	.17	
6	10	4	14.5	2	——	Ditto	.11	
7	12.7	1.5	18.3	—3.7	——	Ditto	.40	
8	11.5	4	20.4	1	S	Ditto	.04	
9	9	3·7	15	—1.6	E	Ditto	.11	
10	13.2	5·5	22.2	3·5	NE	Ditto		On the 27th the clouds exhibited huge masses of strange appearance in regard to their form and colour, some being remarkably dark, and others like snow.
11	12	1.7	17	—6.5	W	Ditto		
12	11.7	6.5	17	4	SW	Ditto	.01	
13	14.2	1.6	16.5	—3.5	W	Brisk		
14	14.5	8.2	15	8	SW	Little	.01	
15	13.4	—1	21	—6.5	NE	Ditto	.01	
16	14.5	—1	21	—6.5	E	Ditto	.10	
17	10.7	2.5	29	5	N	Ditto	.03	
18	10.7	2.5	14	0	W	Ditto		
19	14	8.5	20	6	SW	Ditto		
20	14	5	22	2	——	Ditto	.08	
21	14.7	7.7	22	6	——	Ditto	.07	
22	17.3	5.7	26.2	0	W	Brisk	.09	
23	13	6.5	17	4.6	SW	Little	.13	
24	11.5	1.5	22.5	—0.5	SE	Ditto	·55	
25	14	3.5	27	—1.5	NE	Ditto		
26	12.5	2	21	—1.5	NW	Ditto	.04	
27	10.5	0.5	21	—4	N	Brisk	.07	
28	12.5	1	26	—2.5	NW	Little		
29	12	—2.5	19	—9.2	——	Ditto		
30	10.5	0	19	—5	N	Ditto	.01	
Cent	12.06	2.75	19.46	—0.95			2.88	
Fah.	53.70	36.95	67.02	30.29				

Mean Pressure from the 3 daily observations 29.872 inches. Fahr.
—— Temperature ..... Ditto ..... 7°.59 or 45.66
—— Dew Point ..... Ditto ..... 5°.94 — 42.69
—— Degree of Dryness ... Ditto ..... 1°.65 — 2.97
—— Degree of Moisture .. Ditto ..... .897
—— Force of Vapour. .... Ditto .... . .312 inch.
Least observed degree of Moisture ..... .437
Maximum Temperature in the Shade..... 17°.3 or 63.14
Minimum Temperature in ditto .....— 2°.5 — 27.5°
Maximum Temperature in the Sun ..... 29°.0 — 84.20
Minimum of Terrestrial Radiation .....— 9°.2 — 15.44
Mean Temperature of External Air..... 7°.40 — 45.3

WINDS.

North.....5	days.	N. East.....3	days.
South.....1	..	S. East.....2	..
East.....2	..	N. West.....3	..
West.....5	..	S. West.....9	..

30 days.

Amount of Rain..... 2.88 inches.

MAY.

1836.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
○ S.	1	29.836	5	5	—	Slightly Cloudy	29.827	12	1	11	Slightly Cloudy	29.896	5	3	2	Stormy
M.	2	—.882	9	5	4	Boisterous	—.918	13	5	8	Boisterous	30.069	6	6	—	Ditto
T.	3	—.982	8	7	1	Cold & Windy	—.954	11	5	6	Fine but Cold	29.846	6.5	6.5	—	Ditto
W.	4	—.715	7.5	7.5	—	Cold Rain	—.707	13.5	13.5	—	Cloudy	—.688	6	6	—	Slight Rain
Th.	5	—.715	7.5	7.5	—	Rain	—.778	13	13	—	Ditto	—.914	6.5	6.5	—	Cloudy & Fine
F.	6	30.082	9.5	9.5	—	Slight Haze	30.131	14	10	4	Fine	30.217	6	3.5	2.5	Clear & windy
☾ S.	7	—.313	10.5	6	4 5	Fine	—.289	15.5	5	10.5	Ditto	—.193	7	6	1	Cloudy & Do.
S.	8	—.299	9.5	6	3.5	Ditto	—.256	13	9	4	Clear & Fine	—.258	7	6	1	Ditto
M.	9	—.262	9	6	3	Ditto	—.251	15	7	8	Fine	—.209	5.5	5.5	—	Clear & Fine
T.	10	—.222	10.5	5.5	5	Ditto	—.209	15.5	7	8.5	Ditto	—.231	5 5	5.5	—	Ditto
W.	11	—.217	10	6	4	Ditto	—.177	19	9	10	Very Fine	—.151	11	10.5	5	Fine
Th.	12	—.219	12.5	10	2.5	Very Fine	—.217	20	1	19	Ditto	—.287	10	6	4	Ditto
F.	13	—.347	12.5	9	3.5	Ditto	—.346	20	5	15	Ditto	—.392	10	10	—	Very Fine
S.	14	—.464	14	10	4	Ditto	—.470	20	6	14	Ditto	—.480	10	10	—	Do. and Clear
● S.	15	—.497	15	11	4	Ditto	—.521	20	12	8	Ditto	—.537	11.5	10	1.5	Ditto
M.	16	—.535	15	11	4	Ditto	—.510	21	9	12	Ditto	—.518	10	9	1	Ditto
T.	17	—.548	13	11	2	Ditto	—.502	22	14	8	Ditto	—.412	10	9	1	Ditto
W.	18	—.377	14.5	13	1.5	Ditto	—.311	20	14	6	Fine	—.292	10	10	—	Slightly clouded
Th.	19	—.281	11	11	—	Cold Haze	—.266	15.5	11	4.5	Ditto	—.183	8.5	7.5	1	Clear & Fine
F.	20	—.104	12	10	2	Fine	—.035	20	9	11	Very Fine	29.942	11	10	1	Ditto
S.	21	29.996	13	13	—	Cloudy	—.016	18.5	14	4.5	Ditto	30.043	8.5	8	0.5	Ditto
S.	22	—.999	12.5	8	4.5	Fine	29.930	15	5	10	Fine	29.878	5.5	4.5	1	Clear
☽ M.	23	—.854	8.5	8.5	—	Rain	—.480	15	7	8	Cloudy	—.986	9	7.5	1.5	Stormy
T.	24	30.098	10	6	4	Cold and Dry	30.140	16	3	13	Clear	30.237	5.5	2	3.5	Clear & Cold
W.	25	—.278	11.5	7	4.5	Ditto	—.264	15	6	9	Fine	—.269	5.5	5.5	—	Ditto
Th.	26	—.332	12.5	6	6.5	Ditto	—.340	15	3	12	Ditto	—.349	4.5	3	1.5	Ditto
F.	27	—.411	12.5	7	5.5	Ditto	—.397	16	—3.5	19.5	Do. very Dry	—.383	7.5	5	2.5	Cloudy & Fine
S.	28	—.395	13	10	3	Ditto	—.353	17	5	12	Ditto	—.351	10	7	3	Clear & Do.
S.	29	—.371	12.5	7	5.5	Fine	—.325	19	6	13	Ditto	—.329	7.5	6.5	1	Ditto
○ M.	30	—.303	12	9	3	Ditto	—.224	19.5	9	10.5	Fine	—.186	10	9.5	0.5	Very Fine
T.	31	—.112	13	9	4	Ditto	—.033	20	11	9	Ditto	29.952	12.5	9	3.5	
Cent.		30.195	11.18	8.31	2.87		30.167	16 74	7.45	9.29		30.183	7.80	6.68	1.12	
Fah.			52.12	46.96	5.16			62.13	45.41	16.72			46.04	44.02	2.02	

MAY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	11.5	4.5	22.6	3	E	Brisk	.06	
2	13.5	4.5	20	2.7	NE	Strong	.01	
3	13.5	6	21	5.7	——	Brisk	.08	
4	14	5	23	3	——	Little	.24	
5	12	5	20	3	SE	Ditto	.40	
6	16	4	22	—0.5	E	Ditto		
7	16.5	5.7	27	5	NE	Brisk		
8	16	5.2	26	1	——	Ditto		
9	14.7	4.5	26	0	N	Little		
10	17	—0.5	28	—6	NE	Ditto		
11	21	3	27	—2.5	SW	Ditto		
12	22.7	2	28.5	—3.2	——	Ditto		
13	22.5	5.5	28	1.5	W	Ditto		
14	22	4	32	0.5	NW	Ditto		
15	23	5.2	35	1	S	Ditto		
16	22.5	5.2	34	1.7	E	Ditto		
17	23.2	6.4	34	1.6	——	Ditto		
18	21.4	8.5	30	7	——	Brisk		
19	16.5	4.5	24	1.7	——	Ditto		
20	22.5	7.2	33	4	SE	Little	.14	
21	18.5	3.5	28	0.5	E	Ditto		
22	15	4.5	28	1.6	SE	Brisk	.06	
23	15.2	7.5	24	6.7	NE	Ditto	.01	
24	15.7	4	33	0.5	——	Ditto		
25	15.5	5	32	0.5	——	Little		
26	17	3.5	35	—0.5	E	Brisk		
27	17.5	0.5	35	—5.8	——	Ditto		
28	18.7	7.5	26.5	5.5	NE	Little		
29	19	2.5	28	—2.2	——	Brisk		
30	20	7	32	5.7	——	Little		
31	21	8.5	32	7	——	Ditto	.01	
Cent	17.58	4.82	28.21	1.61			1.01	
Fah.	63.64	40.67	82.78	34.89				

After the first five days very little rain fell, and altogether the amount was moderate. From the 6th to the 23d, the weather was generally fine. North-east winds were the most prevalent, and towards the end they were more especially cold and dry. The radiating thermometer about this time indicated several degrees of frost, particularly on the night of the 27th. Some of the terminal buds of the Sweet Chestnut, and of course of other plants equally tender in a similar stage of growth, were killed. Potatoe tops in some situations were also injured. The mean temperature was several degrees below the average; yet the cheering influence of the Sun formed a pleasing contrast with the clouded state of the atmosphere in the former months.

Mean Pressure from the 3 daily observations	30.181	inches	Fahr.
—— Temperature .....Ditto.....	11°.90	or	53.42
—— Dew Point .....Ditto.....	7°.48	—	45.46
—— Degree of Dryness ....Ditto.....	4°.42	—	7.96
—— Degree of Moisture ...Ditto.....	.768		
—— Force of Vapour .....Ditto.....	.345	inch.	
Least observed degree of Moisture	.310		
Maximum Temperature in the Shade	23°.2	or	73.76
Minimum Temperature in ditto.....	— 0°.5	—	31.10
Maximum Temperature in the Sun	35°.0	—	95.00
Minimum of Terrestrial Radiation	— 6°.0	—	21.20
Mean Temperature of External Air	11°.20	—	52.16

WINDS.

North.....	1 days.	N. East....13 days.	
South.....	1 ..	S. East.....	3 ..
East.....	9 ..	N. West....	1 ..
West.....	1 ..	S. West....	2 ..

31 days.

Amount of Rain .....1.01 inch.

JUNE.

		Morning.					Noon.					Night.				
1836.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	29.939	13	13	—	Overcast	29.913	17.5	17.5	—	Overcast	29.888	12	11	1	Cloudy & Fine
Th.	2	—.744	14	14	—	Ditto	—.661	18	14	4	Ditto	—.597	13	13	—	Hazy and Do.
F.	3	—.604	17	17	—	Cloudy	—.598	21	18	3	Cloudy	—.571	14	13	1	Cloudy
S.	4	—.582	16	15	1	Ditto	—.599	20	15	5	Fine	—.733	11	11	—	Slight Rain
S.	5	—.750	16	13	3	Fine	—.885	18	18	—	Showery	—.939	10	10	—	Cloudy
☾ M.	6	30.034	13.5	12	1.5	Ditto	30.020	20	8	12	Very Fine	—.979	12	11.5	0.5	Do. & Very Fine
T.	7	29.939	13	13	—	Overcast	29.877	17.5	11	6.5	Overcast	—.700	13	13	—	Hazy, Fine
W.	8	—.647	15.5	15.5	—	Cloudy	—.628	21.5	16	5.5	Very Fine	—.635	13.5	12	1.5	Fine
Th.	9	—.745	18	13	5	Fine	—.796	17.5	17.5	—	Rain	—.824	16.5	14	2.5	Ditto
F.	10	—.806	16	14.5	1.5	Overcast	—.848	17.5	15	2.5	Overcast	—.824	16	16	—	Rain
S.	11	—.785	15	15	—	Slight Rain	—.796	22	16.5	5.5	Fine	—.952	12	11	1	Windy
S.	12	30.104	17	11	6	Fine	30.173	18.5	12	6.5	Cloudy & Do.	30.262	10	9	1	Clear
M.	13	—.300	16	15	1	Overcast	—.309	22	15	7	Ditto	—.224	16.5	15.5	1	Very Fine
● T.	14	—.255	21.5	18	3.5	Fine	—.180	25.5	16	9.5	Very Fine	—.130	16.5	15	1.5	Ditto
W.	15	29.938	20.5	16	4.5	Very Fine	29.849	28.5	16.5	12	Hot and Dry	29.815	19.5	18.5	1	Do. with Lightning
Th.	16	—.898	19	15	4	Fine	—.910	21.5	21.5	—	Rain	—.910	16	16	—	Very Fine
F.	17	—.890	20.5	15	5.5	Ditto	—.825	23	23	—	do. thunderclouds	—.786	14	14	—	Cloudy
S.	18	—.798	16	16	—	Very Fine	—.746	23	16	7	Very Fine	—.683	14.5	14.5	—	Do. & Fine
S.	19	—.718	16.5	14	2.5	Ditto	—.743	18	13	5	Ditto	—.869	14.5	14.5	—	Ditto
M.	20	—.990	15	11	4	Ditto	30.018	19.5	7	12.5	Ditto	30.028	12	11	1	Ditto
T.	21	30.015	15.5	14	1.5	Overcast	29 979	22	17	5	Cloudy	29.970	15	15	—	Ditto
☽ W.	22	—.029	17	17	—	Rain	—.913	18	17	1	Overcast	—.833	15	14	1	Ditto
Th.	23	29.809	16.5	16.5	—	Overcast	—.798	20.5	17	3.5	Fine	—.794	14.5	13.5	1	Ditto
F.	24	—.789	17	14	3	Ditto	—.742	20	15	5	Ditto	—.901	12	12	—	Clear
S.	25	30.259	17	14	3	Fine	30.081	18	18	—	Showery	30.149	12.5	12.5	—	Do. & Fine
S.	26	—.255	18	15	3	Very Fine	—.255	22	15	7	Slightly Clouded	—.310	14	13.5	0.5	Very Fine
M.	27	—.325	20	16	4	Do. & Overcast	—.284	23	18	5	Do. and Fine	—.141	16.5	16.5	—	Ditto
○ T.	28	—.089	23	18	5	Very Fine	—.069	28	20	8	Very Hot	—.207	15.5	13	2.5	Ditto
W.	29	—.259	17.5	10	7.5	Ditto	—.289	24	7	17	Ditto	—.307	15	13	2	Ditto
Th.	30	—.298	19	10	9	Ditto	—.233	26	8	18	Ditto	—.186	18	15.5	2.5	Ditto
Cent.		29.953	16.96	14.33	2 63		29.933	21.05	15.28	5.77		29.938	14.13	13.38	0.75	
Fah.			62.52	57.79	4.73			69.89	59.51	10.38			57.43	56.08	1.35	

JUNE.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	17	11	26	6	NE	Little			
2	19.2	10.5	30.5	8.7	SE	Ditto		.14	This month maintained a full average temperature; and nearly the usual amount of rain fell. The 15th was hot and dry; the thermometer in the shade at (30° Cent.) 86° Fahr. Lightning occurred at night. On the 17th much rain fell, and thunder was heard. There was also a thunder storm on the afternoon of the 24th. Vegetation, hitherto unusually retarded, now made rapid progress, under the most favourable circumstances.
3	20.5	12.2	25	10.5	S	Brisk		.01	
4	20.7	8.5	26	7	——	Ditto		.09	
5	17.7	6.2	25	3.7	NW	Little		.03	
6	20.5	11	28	10	S	Ditto		.01	
7	16.5	11.5	21.5	9.5	——	Ditto		.05	
8	22	11	29.5	8.5	SW	Brisk			
9	20	14	26.5	12	——	Ditto		.01	
10	20.5	13.5	26.5	13.5	——	Ditto		.06	
11	22.5	8.5	29.5	6	S	Ditto			
12	22.4	8	28	4	——	Ditto			Mean Pressure from the 3 daily observations 29.941 inches. Fahr.
13	24.5	12.7	31	12.2	W	Little			—— Temperature ..... Ditto ..... 17°.38 or 63.28
14	27.2	10	36.5	7.3	S	Ditto			—— Dew Point ..... Ditto ..... 14°.33 — 57.79
15	30	14.5	48.5	12.7	——	Brisk		.01	—— Degree of Dryness ... Ditto ..... 3°.05 — 5.49
16	23	11	31.5	9.5	——	Little			—— Degree of Moisture .. Ditto ..... .842
17	23.5	9.5	31.7	7.7	——	Ditto		.80	—— Force of Vapour ..... Ditto ..... .522 inch.
18	22.7	10.5	31	8	SW	Brisk			Least observed degree of Moisture ..... .357
19	22.5	11	30.5	9.5	W	Ditto		.09	Maximum Temperature in the Shade..... 30°.0 or 86.00
20	20.5	10	29.5	8	——	Ditto			Minimum Temperature in ditto ..... 6°.2 — 43.16
21	21	13.5	26	13.5	——	Ditto		.03	Maximum Temperature in the Sun ..... 48°.5 — 119.30
22	18	14	23.5	12.8	SW	Ditto		.04	Minimum of Terrestrial Radiation ..... 3°.7 — 38.66
23	21.5	12	29	11.5	——	Ditto			Mean Temperature of External Air ..... 16°.35 — 61.43
24	20	10	26.5	8	——	Ditto		.27	
25	20.5	10.5	27.8	8.8	——	Ditto		.02	
26	23	9.5	30.5	7	——	Ditto			
27	23.5	10	30	8	S	Little			
28	29.5	9.2	38	5.3	SW	Brisk			
29	25.3	6.5	37.5	5	E	Little			
30	29.5	14.5	38	13.5	S	Ditto			
								1.66	
Cent	22.17	10.53	29.96	8.92					
Fah.	71.90	50.95	85.93	48.05					

WINDS.

North	0 days	N. East	1 days
South	12 ..	S. East	1 ..
East	1 ..	N. West	1 ..
West	4 ..	S. West	10 ..

30 days.

Amount of Rain..... 1.66 inch.

JULY.

			Morning.				Noon.					Night.				
1835.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
F.	1	30.097	24	18.5	5.5	Very Fine	30.098	28.5	20	8.5	Very Hot	30.239	20	19	1	Clear & Fine
S.	2	—.185	24	20	4	Cloudless & hot	—.247	28	18	10	Ditto	—.213	15	13	2	Ditto
S.	3	—.215	21	15	6	Very Fine	—.219	26	8	18	Ditto	—.203	18.5	16.5	2	Ditto
M.	4	—.240	21	17	4	Ditto	—.200	29.5	14	15.5	Ditto [Do.	—.167	18	17	1	Do. Lightning
☾ T.	5	—.120	23	20	3	Sultry	—.165	31	16	15	Cloudless &	—.132	22	19	3	Fine
W.	6	—.116	20	20	—	Thunder	—.167	24.5	21	3.5	Overcast &	—.187	14	13	1	Do. & Clear
Th.	7	—.219	18	12	6	Very Fine	—.200	24	10	14	Ditto [Fine	—.212	15	13.5	1.5	Ditto
F.	8	—.262	18	13	5	Do. Overcast	—.271	22	10	12	Very Fine	—.257	13	12.5	0.5	Ditto
S.	9	—.220	19	17	2	Ditto	—.206	23.5	6.5	17	Ditto	—.162	18	18	—	Very Fine
S.	10	—.135	21	19	2	Very Fine	—.130	27	19.5	7.5	Ditto	—.111	21	18	3	Ditto
M.	11	—.089	23	18	5	Ditto	—.049	28	18	10	Ditto	29.890	19	18	1	Ditto
T.	12	29.706	18.5	18.5	—	Rain	29.764	23	15	8	Ditto	—.946	13	12	1	Clear
● W.	13	30.041	16	10	6	Fine	—.998	23	12	11	Ditto	—.969	16.5	15	1.5	Cloudy & Windy
Th.	14	29.962	17	13	4	Ditto	—.989	22	10	12	Ditto	30.002	14	11	3	Clear & Fine
F.	15	—.895	15.5	11	4.5	Cloudy	—.778	21	16	5	Cloudy	29.668	10	10	—	Ditto
S.	16	—.734	15	15	—	Ditto	—.804	19.5	12	7.5	Fine	—.821	15.5	14	1.5	Fine
S.	17	—.908	15.5	10	5.5	Ditto	—.961	20	11	9	Ditto	30.081	15	13	2	Ditto
M.	18	30.116	16	11	5	Fine	30.077	21.5	10	11.5	Ditto	—.101	11	8	3	Clear and Do.
T.	19	29.923	17	14	3	Ditto	29.822	18	18	—	Rain	29.858	12	12	—	Drizzly
W.	20	—.557	11.5	11.5	—	Heavy Rain	—.441	10.5	10.5	—	Ditto	—.699	7	7	—	Clear and Fine
☽ Th.	21	—.658	15	12	3	Fine	—.658	13	13	—	Thunder Show[rs]	—.738	11	11	—	Ditto
F.	22	—.778	14	10	4	Ditto	—.795	19	12	7	Cloudy & Fine	—.897	10	9	1	Fine
S.	23	30.043	14	12	2	Ditto	30.071	17.5	17.5	—	Ditto	30.055	10	10	—	Do. and Clear
S.	24	29.824	12	12	—	Heavy Rain	29.724	20	20	—	Ditto	29.732	12	12	—	Fine
M.	25	—.787	15	11	4	Fine	—.843	18	12	6	Ditto	29.960	13.5	13	0.5	Cloudy & Do.
T.	26	30.101	18	15	3	Very Fine	30.105	22.5	15	7.5	Ditto	30.132	16.5	15	1.5	Ditto
W.	27	—.140	18.5	18.5	—	Overcast	—.136	24	18	6	Ditto	—.107	14.5	14.5	—	Lightning
○ Th.	28	—.059	19	17	2	Very Fine	29.968	27	19	8	Very Hot	29.903	19	18	1	Cloudy & Fine
F.	29	29.665	16.5	16.5	—	Heavy Rain	—.621	22	20	2	Cloudy	—.639	14	12	2	Stormy
S.	30	—.928	15	12	3	Cloudy	30.081	15.5	15.5	—	Showery	30.289	11.5	10.5	1	Cloudy & Cold
S.	31	30.418	15	10	5	Very Fine	—.408	20	7	13	Cloudy & Fine	—.325	13	12	1	Ditto
Cent.		30.004	17.61	14.50	3.11		30.000	22.22	14.34	7.88		30.002	14.60	13.44	1.16	
Fah.			63.69	58.10	5.59			71.99	57.81	14.18			58.28	56.19	2.09	

JULY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	31	13·5	39	11·5	W	Little		The weather still continued favourable for the crops. The temperature nearly equalled the mean for this month. The 5th was cloudless and excessively hot, the thermometer in the shade being at 94½ Fah., whilst that in the sun was 128° Fah. This, as regards the temperature in the shade was higher than it had been for many years. At night there was lightning; and some rain in heavy drops, with a rainbow, about 6 A. M. on the following morning. A thunder storm immediately followed, which in London, and its more immediate environs, was accompanied with hail so large as to effect considerable damage, as did also the lightning. Another thunder storm occurred on the 21st with which there was also hail in some parts of the country South East from London.
2	31	8	49·5	7	——	Ditto		
3	29	8.5	48	6	SW	Ditto		
4	33·5	13·5	53·5	12	S	Ditto		
5	34·7	17·5	53·5	17	SE	Ditto	.08	
6	26	7·5	40·5	4·5	NW	Ditto		
7	24·5	10·5	42	7·8	SW	Ditto		
8	24·5	9	42·5	6.5	NW	Ditto		
9	26.2	13	42	9	W	Brisk		
10	30·5	13·5	46	12	——	Ditto		
11	31	15·5	46.5	14	S	Little		
12	25·5	11	40.5	6.7	NW	Brisk	.01	
13	24·5	12.2	40.5	10.5	SW	Ditto		
14	23·5	10	38	7·5	——	Ditto		
15	19·5	8	31	6.5	S	Ditto	·43	
16	21	13	35	11.5	W	Ditto		
17	22	11	37	9	SW	Ditto		
18	22.5	8.5	37·5	5	W	Ditto		
19	20.5	10	25	9·5	SW	Ditto	.38	
20	15	6	22.5	4	N	Ditto	.03	
21	20	8.5	35	6	SW	Little	.03	
22	21.7	8.5	36	7	W	Ditto	.03	
23	21	7·3	36.5	4	——	Ditto	.14	
24	22	10	31.5	9	S	Ditto	.15	
25	20	9·5	33	7	W	Brisk		
26	24	15	39	14	SW	Little		
27	23·5	8·5	35·5	6	S	Ditto		
28	28	15	42.5	13	SW	Ditto	.32	
29	21.7	12.2	31.5	10.5	S	Brisk	.02	
30	19	7·7	26	5	W	Strong	.14	
31	20	11	32	8.5	——	Little	.02	
Cent	24.41	10.74	38.34	8.63			1.78	
Fah.	75·94	51.33	101.01	47·53				

Mean Pressure from the 3 daily observations	30.002	inches.	Fahr.
—— Temperature .....Ditto.....	18°.14	or	64.65
—— Dew Point .....Ditto.....	14°.09	—	57.36
—— Degree of Dryness ....Ditto.....	4°.05	—	7.29
—— Degree of Moisture....Ditto.....	·790		
—— Force of Vapour.....Ditto.....	·514	inch.	
Least observed degree of Moisture.....	·348		
Maximum Temperature in the Shade....	34°.7	or	94.46
Minimum Temperature in ditto.....	6°.0	—	42.80
Maximum Temperature in the Sun	53°.5	—	128.30
Minimum of Terrestrial Radiation	4°.0	—	39.2
Mean Temperature of External Air.....	17°.57	—	63.62

WINDS.

North.....1 days.		N. East ....0 days.	
South 6	..	S.East.....1	..
East 0	..	N. West....4	..
West 10	..	S. West 9	..

31 days.

Amount of Rain ..... 1.78 inch.

AUGUST.

		Morning.					Noon.					Night.				
1836.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
M.	1	30.178	15	14	1	Overcast	30.111	22	18	4	Cloudy	30.026	11.5	10	1.5	Clear and Fine
T.	2	—.037	14	11	3	Clear & Cold	—.073	19	11	8	Fine	—.075	15	13	2	Ditto
W.	3	29.999	17.5	14	3.5	Very Fine	29.869	27	12	15	Ditto	29.736	15.5	15	0.5	Ditto
☾ Th.	4	—.823	19	15	4	Overcast	—.852	24	15	9	Ditto	—.897	15.5	15.5	—	Cloudy & Fine
F.	5	— 972	17	15	2	Hazy	—.991	22	19	3	Ditto	30.022	14	14	—	Clear & Do.
S.	6	30.093	18	15	3	Fine	30.120	21.5	15	6.5	Ditto	—.161	13.5	13.5	—	Ditto
S.	7	—.212	16	14	2	Ditto	—.176	22	12	10	Ditto	—.150	15	13	2	Ditto
M.	8	—.168	16	13	3	Ditto	—.160	22.5	12	10.5	Ditto	—.169	14	14	—	Ditto
T.	9	—.224	15	13	2	Ditto	—.190	22	9	13	Ditto	—.184	11	10	1	Ditto
W.	10	—.192	14	13	1	Ditto	—.160	22	12	10	Ditto	—.204	12	11	1	Ditto
Th.	11	—.291	18	13	5	Cloudy & Do.	—.285	21.5	13	8.5	Ditto	—.340	15	12 5	2.5	Cloudy & Windy
● F.	12	—.334	15.5	13	2.5	Overcast	—.272	22.5	13	9.5	Hot and Dry	—.287	11	11	—	Clear and Fine
S.	13	—.204	17.5	16	1.5	Dry Haze	—.131	22	22	—	Fine	—.027	16.5	14	2.5	Do. with lightning
S.	14	29.921	15.5	15.5	—	Heavy rain with	29.847	22	22	—	Slightly clouded	29.863	15	15	—	Clear & Fine
M.	15	—.932	17	17	—	Hazy [thunder	—.963	22	19	3	Overcast	30.075	15	14	1	Very Fine
T.	16	30.188	14	14	—	Ditto	30.165	22	16	6	Do. & Fine	—.129	16	16	—	Ditto
W.	17	—.077	19	17	2	Very Fine	—.081	22	16	6	Fine	—.098	15	13.5	1.5	Ditto
Th.	18	—.069	16	14	2	Slight Haze	—.003	22	18.5	3.5	Overcast& Do.	29.953	16.5	15.5	1	Ditto
☽ F.	19	—.152	13.5	8	5.5	Cold & Dry	—.178	18	9	9	Fine	30.164	12	12	—	Clear & Fine
S.	20	29.964	14	14	—	Hazy	29.795	17	17	—	Rain	29.790	15	15	—	Cloudy & Windy
S.	21	—.939	13.5	11	2.5	Fine but Cool	—.955	19	10	9	Very Fine	—.909	10	10	—	Clear & Fine
M.	22	—.787	13.5	13.5	—	Hazy	—.731	20.5	15	5.5	Ditto	—.633	14	13	1	Cloudy & Do.
T.	23	—.602	15	15	—	Overcast	—.678	18.5	14	4.5	Hazy	—.748	12	12	—	Rain
W.	24	30.002	11	11	—	Heavy Rain	30.047	17.5	10	7.5	Fine	30.159	9	7.5	1.5	Clear & cold
Th.	25	—.171	12.5	12.5	—	Fine	—.125	21.5	14	7.5	Overcast& Do.	—.049	15	14.5	0.5	Cloudy & Fine
○ F.	26	29.987	14.5	14.5	—	Drizzly	29.973	17	17	—	Rain	—.012	12.5	12.5	—	Ditto
S.	27	—.954	15	14	1	Fine	—.926	20.5	19	1.5	Fine	29.952	16	15.5	0.5	Ditto
S.	28	—.950	15.5	15.5	—	Rain	—.962	19	19	—	aKin	30.011	11	11	—	Clear and Cool
M.	29	30 110	12	12	—	Fine	30.113	19	11	8	Very Fine	30.124	14.5	14.5	—	Cloudy & Fine
T.	30	—.186	14	13	1	Ditto	—.174	21	15	6	Ditto	—.135	15	14	1	Ditto
W.	31	—.076	16.5	15	1.5	Ditto	—.040	22.5	16	6.5	Ditto	29.956	11	11	—	Clear & Fine
Cent.		30.057	15.30	13.72	1.58		30.037	20.92	14.78	6.14		30.033	13.67	13.0	0.67	
Fah.			59.54	56.70	2.84			69.65	58.60	11.05			56.60	55.40	1.20	

AUGUST.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	21.5	9	31	6.6	SW	Brisk			
2	24.5	7.7	30	5.5	NW	Little			
3	29	11.5	35	11	S	Brisk			
4	26.2	14	32	13	——	Little			
5	21.5	12.5	29.5	10.5	NE	Ditto			
6	21	8.5	30	5	——	Ditto			
7	21	9	29.5	6	——	Ditto			
8	22	6.5	30.5	3.5	——	Ditto			
9	22	5.5	30	4	N	Ditto			
10	23	10	32	7.5	E	Brisk			
11	22.5	12.5	30	11.5	——	Ditto			
12	23	9.5	30.7	7.5	——	Little			
13	25	9.5	33	8.5	——	Ditto		.44	
14	24.3	11.7	29	10	SW	Ditto		.15	
15	24.5	11.2	34	9.5	W	Ditto			
16	22.5	14	32	12.2	S	Ditto			
17	24	10	34.5	7.5	W	Ditto			
18	22.5	10.5	30.5	9	——	Ditto		.02	
19	21	6	31.5	2.5	——	Brisk			
20	16	9.5	21	6.5	SW	Ditto		.13	
21	21	8.5	32	6	W	Little			
22	19.7	12.6	27.5	12	SW	Brisk		.06	
23	18	9.7	24	9.7	NE	Little		.69	
24	19.5	4.5	31	2.3	——	Brisk		.02	
25	21	11	34	8	SE	Little			
26	20.7	7.5	34	5	S	Ditto		.14	
27	23	12.5	31	13	SW	Brisk		.12	
28	21.5	6	29.5	2.5	S	Little		.20	
29	20.5	7.2	31.5	4	W	Ditto			
30	22.7	11.5	32.5	10	SW	Ditto			
31	24.5	7	34.5	5	S	Brisk			
Cent	22.24	9.56	30.87	7.57				1.97	
Fah.	72.03	49.20	87.56	45.62					

The mean temperature was not so high as the average by nearly 2°; yet the weather was on the whole favourable for bringing forward the crops, and this may be reckoned the third successively congenial month for vegetation, for May, though better than those preceding it, can scarcely be included. The amount of rain was half an inch less than the usual quantity. None fell till the 13th; by which time some plants began to be in want of moisture. On that day and the following, more than half an inch of rain fell. Thunder occurred about the same time.

Mean Pressure from the 3 daily observations	30.042	inches.	Fahr.
—— Temperature ..... Ditto	16°.63	or	61.93
—— Dew Point ..... Ditto	13°.83	—	56.89
—— Degree of Dryness ... Ditto	2°.80	—	5.04
—— Degree of Moisture ... Ditto	.853		
—— Force of Vapour ..... Ditto	.506	inch.	
Least observed degree of Moisture	.452		
Maximum Temperature in the Shade	29°.0	or	84.2
Minimum Temperature in ditto	4°.5	—	40.10
Maximum Temperature in the Sun	35°.0	—	95.00
Minimum of Terrestrial Radiation	2°.3	—	36.14
Mean Temperature of External Air	15°.90	—	60.62

WINDS.

North.....	1 days.	N. East.....	6 days.
South.....	6 ..	S. East	1 ..
East.....	4 ..	N. West	1 ..
West.....	6 ..	S. West.....	6 ..

31 days.

Amount of Rain..... 1.97 inch.

SEPTEMBER.

		Morning.					Noon.					Night.				
1836.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
Th.	1	29.775	15.5	15.5	—	Very Fine	29.857	21	13	8	Very Fine	29.921	13	12	1	Clear & Fine
☾ F.	2	—.775	14	14	—	Overcast	—.720	11.5	11.5	—	Stormy Show-	—.929	7.5	7.5	—	Clear & Cold
S.	3	—.939	13	11	2	Very Fine	—.869	18.5	11	7.5	Fine [ers	—.639	10	10	—	Clear & Fine
S.	4	—.372	16.5	16.5	—	Rain	—.472	22.5	19	3.5	Ditto	—.452	13.5	13.5	—	Ditto
M.	5	—.538	12.5	11	1.5	Cloudy	—.658	18	13	5	Very Fine	—.566	10	10	—	Ditto
T.	6	—.361	13	13	—	Showery	—.303	16	16	—	Stormy Show-	—.476	10	10	—	Fine
W.	7	—.611	10	10	—	Fine, but Cold	—.709	15.5	11	4.5	Fine [ers	—.785	9	9	—	Overcast& Do.
Th.	8	—.784	12	12	—	Ditto	—.753	18	12	6	Very Fine	—.738	9	9	—	Ditto
F.	9	—.730	13	13	—	Overcast	—.794	16	13	3	Cloudy	—.895	6.5	6.5	—	Clear
S.	10	—.773	10	10	—	Damp	—.818	12	12	—	Fine	—.924	6	6	—	Ditto
● S.	11	30.026	10	8	2	Clear	—.919	11	11	—	Cloudy	—.993	10	10	—	Stormy
M.	12	—.023	12	11	1	Stormy	30.046	14.5	14.5	—	Showery	30.091	11	10	1	Clear & windy
T.	13	—.083	12.5	12	0.5	Cloudy&Cold	—.078	15	11	4	Boisterous	—.111	10	10	—	Ditto
W.	14	—.121	11	11	—	Cold Haze	—.146	15	7	8	Cold and Dry	—.150	8	8	—	Fine
Th.	15	—.153	12	12	—	Clear	—.163	17	12	5	Fine	—.156	11	11	—	Do. & Cloudy
F.	16	—.098	11	11	—	Rain	—.092	15	15	—	Showery	—.128	8	8	—	Ditto
S.	17	—.073	13	13	—	Fine	—.082	15.5	15.5	—	Thunder Showers	—.074	10	10	—	Ditto & Clear
☽ S.	18	—.009	14	14	—	Cloudy	—.030	15	11	4	Cloudy & Fine	29.985	10	9	1	Do & Overcast
M.	19	29.982	10	10	—	Overcast	29.980	15	11	4	Ditto	—.962	9.5	9.5	—	Ditto
T.	20	—.992	11	10	1	Ditto	—.902	16	11	5	Fine	30.018	6.5	6.5	—	Clear
W.	21	30.146	7	7	—	Coldand damp	30.192	11.5	5	6.5	Ditto	—.260	6	6	—	Fine
Th.	22	—.288	5	5	—	Foggy	—.271	15	11	4	Very Fine	—.179	11.5	11.5	—	Ditto
F.	23	29.964	14.5	14.5	—	Stormy & Wet	29.937	16.5	16.5	—	Stormy & Wet	—.038	13.5	13.5	—	Ditto
○ S.	24	30.137	15	15	—	Very Fine	30.162	19	16	3	Very Fine	29.999	13	13	—	Ditto
S.	25	—.165	15	15	—	Fine	—.205	20	16	4	Cloudy	30.154	14.5	14.5	—	Ditto
M.	26	—.126	16	16	—	Hazy	—.104	23	20	3	Very Fine	29.930	17	16.5	0.5	Cloudy & Do.
T.	27	29.823	16	16	—	Ditto	29.866	18.5	13	5.5	Cloudy & Do.	—.746	14.5	14.5	—	Ditto
W.	28	—.684	12.5	12.5	—	Clear	—.638	12	12	—	HeavyShowers	—.546	10	10	—	Clear
Th.	29	—.270	11.5	11.5	—	Rain	—.343	15.5	15.5	—	Cloudy	—.480	10	10	—	Rain
F.	30	—.406	8.5	8.5	—	Clear & Cold	—.465	9	9	—	Stormy Showers	—.611	4	4	—	Clear and cold
Cent.		29.844	12.23	11.97	0.26		29.885	15.93	12.82	3.11		29 897	10.08	9.97	0.11	
Fah.			54.01	53.54	0.47			60.67	55.07	5.60			50.14	49.94	0.20	

SEPTEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	22	10	34·5	7	SW	Brisk	.01	'The preceding three months of generally fine weather gave hopes that the effects of a late spring would be compensated by a favourable autumn; and although the temperature fell greatly in the beginning of the present month, the depression happening so early in the season, was expected to be but temporary. Such however was not the case; for throughout, the weather was cold and cloudy, frequently boisterous, and very wet. On the night of the 21st the thermometer was at freezing, and the radiator as low as 26° Fahr. The Dahlias were not then materially affected in the garden; but in some parts of the country their flowering was greatly deteriorated. The 2nd, 6th, 12th, 13th, 23d and 30th were particularly stormy and wet.
2	19·5	3·5	29	—0.5	——	Ditto	.22	
3	20	9	30·5	5·8	S	Little	·45	
4	22	10·5	31	8	——	Brisk	·14	
5	18	8·5	27·5	6·5	W	Little	.16	
6	17·5	9	23·5	7	SW	Strong	·70	
7	17·5	8	27	5	N	Little		
8	19	8·5	26·5	6	SW	Ditto		
9	17	4	23	1	——	Ditto	·38	
10	15·5	4	23·5	1	W	Ditto		
11	16	9·5	23	8	——	Ditto	.08	
12	14	10·5	19·5	9·5	N	Brisk	.02	
13	15	9	22·7	7	——	Strong	.01	
14	16	7	18	4·5	——	Brisk	.01	
15	18	9	25	7	NE	Little	.02	
16	18·5	6·7	26	3·5	——	Ditto	.04	
17	18	9·5	24·5	8	——	Ditto	.06	
18	14·5	8	15·5	7·5	——	Brisk		
19	16	6·5	23	4	W	Little		
20	15·5	1·5	24	—1	——	Ditto	.08	
21	12	0	17	—3·7	——	Ditto		
22	16·5	9·5	23	8	S	Ditto	.08	
23	17	12	17	10·5	SW	Strong	.22	
24	21	11	27	9	——	Brisk		
25	20	14	24	12	W	Ditto		
26	23	13·5	28·5	12	S	Little		
27	19	9	21·5	7	SW	Brisk	.04	
28	16·5	9·5	17	8	S	Little	·52	
29	15	6·5	15	4·7	SW	Ditto	·33	
30	12.7	1·3	15	—1	W	Brisk	.24	
Cent	17.40	7·95	23·40	5·71			3.81	
Fah.	63.32	46.31	74·12	42·28				

Mean Pressure from the 3 daily observations	29.875	inches.	Fahr.
—— Temperature ..... Ditto	12°.74	or	54·93
—— Dew Point ..... Ditto	11°.58	—	52.84
—— Degree of Dryness .... Ditto	1°.16	—	2.09
—— Degree of Moisture .. Ditto	.926		
—— Force of Vapour ..... Ditto	.439	inch.	
Least observed degree of Moisture	.616		
Maximum Temperature in the Shade	23°.0	or	73.40
Minimum Temperature in ditto	0°.0	—	32.00
Maximum Temperature in the Sun	34°.5	—	94.10
Minimum of Terrestrial Radiation	—3°.7	—	25·34
Mean Temperature of External Air	12°.67	—	54.80

WINDS.

North 4	days	N. East 4	days.
South.....5	..	S. East 0	..
East.....0	..	N. West.. .0	..
West 8	..	S. West 9	..

30 days.

Amount of Rain.....3.81 inches.

OCTOBER.

		Morning.					Noon.					Night.				
1836.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	29.393	10	10	—	Cloudy	29.186	11	11	—	Stormy Rain	28.959	10	10	—	Cloudy & Fine
☾ S.	2	—.268	8	8	—	Clear	—.354	11.5	11.5	—	Do. Showers	29.194	4	4	—	Rain
M.	3	28.940	6	6	—	Heavy Rain	—.253	11	8	3	Boisterous	29.430	3.5	3.5	—	Clear & Fine
T.	4	29.508	1	1	—	Frosty	—.457	6	6	—	Fine	—.622	5.5	5.5	—	Hazy
W.	5	—.869	6	6	—	Hazy	—.875	15	11	4	Very Fine	—.956	4	4	—	Clear & Fine
Th.	6	—.929	8	8	—	Do. with rain	—.793	13	13	—	Hazy	—.525	12.5	12.5	—	Lightning, Rain
F.	7	—.528	13	13	—	Overcast	—.445	14.5	14.5	—	Rain	—.374	12.5	12.5	—	Cloudy & Fine
S.	8	—.384	23.5	12.5	—	Densely Clouded	—.385	15.5	15.5	—	Cloudy	—.374	6	6	—	Clear & Ditto
S.	9	—.375	11	11	—	Clear	—.386	14	12	2	Clear & Fine	—.433	10.5	10.5	—	Fine
● M.	10	—.284	11	11	—	Heavy Rain	—.289	17.5	17.5	—	Dense Clouds	—.376	12	12	—	Ditto
T.	11	—.182	13	13	—	Boisterous	—.343	15.5	13	2.5	Fine	—.394	10	10	—	Ditto
W.	12	—.589	8	8	—	Clear	—.584	14.5	14.5	—	Showery	—.194	10	10	—	Stormy, Rain
Th.	13	—.092	14	14	—	Boisterous	—.260	15	15	—	Do. & Windy	—.453	12.5	9	3.5	Cloudy & Windy
F.	14	—.740	11.5	10	1.5	Very Clear	—.881	15	9	6	Fine	—.952	10.5	10.5	—	Overcast
S.	15	—.857	12	12	—	Rain	—.864	16	16	—	Showery	30.051	8	8	—	Clear & Fine
S.	16	30.231	9	9	—	Foggy	30.203	13.5	13.5	—	Foggy	—.193	12.5	12.5	—	Hazy & Do.
☽ M.	17	—.202	11.5	11.5	—	Ditto	—.186	15	15	—	Ditto	—.170	12.5	12.5	—	Ditto
T.	18	—.169	13.5	13.5	—	Ditto	—.139	18	18	—	Overcast	—.164	13	13	—	Ditto
W.	19	—.224	14	14	—	Cloudy	—.285	15.5	12	3.5	Very Fine	—.426	5	5	—	Clear
Th.	20	—.495	4	4	—	Foggy	—.454	9	9	—	Foggy	—.396	4.5	4.5	—	Foggy
F.	21	—.310	6.5	6.5	—	Ditto	—.323	13.5	13.5	—	Fine	—.334	6	6	—	Clear
S.	22	—.397	7	7	—	Ditto	—.413	13.5	10	3.5	Do. & Overcast	—.399	5	5	—	Fine
S.	23	—.436	7	7	—	Ditto	—.411	12	10	2	Very Fine	—.400	5	5	—	Ditto
⊙ M.	24	—.417	9	9	—	Ditto	—.374	12	12	—	Foggy	—.340	12	12	—	Ditto
T.	25	—.280	9	9	—	Do. & Drizzly	—.257	10.5	10.5	—	Ditto	—.209	10	10	—	Ditto
W.	26	—.201	9	9	—	Ditto	—.187	12	12	—	Overcast	—.010	10	10	—	Cloudy
Th.	27	29.700	10.5	10	0.5	Cloudy	29.791	7.5	2	5.5	Showery	—.011	1.5	1.5	—	Clear & Cold
F.	28	—.945	3.5	2	1.5	Ditto and Cold	—.906	5	—2	7	Very Cold	29.710	—3.5	—3.5	—	Ditto
S.	29	—.495	1	1	—	Overcast	—.684	0	0	—	Snowing	— 865	0	0	—	Overcast
S.	30	30.184	0.5	0.5	—	Very Clear	30.014	3.5	3.5	—	Clear & Fine	30.089	—1.5	—1.5	—	Clear
M.	31	—.134	—2	—2	—	Sharp Frost	—.133	4	4	—	Fine	—.141	—2.5	—2.5	—	Ditto
Cent.		29.831	8.32	8.21	0.11		29.841	11.92	10.66	1.26		29.843	7.12	7.01	0.11	
Fah.			46.97	46.78	0.19			53.45	51.19	2 26			44.81	44.61	0.20	

OCTOBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	12.5	5.3	15.5	3	S	Strong	.39	Whether the temperature of this month be compared in regard to the mean, or the minimum extreme, it will be found much lower than in any similar period of the season for at least the last ten years. Of the latter, that of 1835 was the coldest, when the thermometer was a little below 28° Fahr.; but on the nights of the 28th and 30th of the present month, it was as low as 23°. On the morning of the 29th, snow had fallen to the depth of nearly 3 inches. During the day there were stormy showers of snow in broad flakes. Many of the deciduous kinds of trees and shrubs had their leaves yet green, others partly shed, were in their fading colour, drooping or falling with the snow. The beauty of the Dahlias was spoiled by frost as early as the 4th.
2	12	5.5	15.5	2.5	SW	Ditto	.48	
3	12.6	—1.5	13	—4.8	W	Ditto	.04	
4	16	1	21	0	SW	Little		
5	17	2	20	— 1	——	Ditto	.04	
6	15	11	18.5	11	SE	Ditto	.78	
7	16.2	10	17	8.5	S	Ditto	.14	
8	16	4.5	18.5	0.5	——	Ditto	.25	
9	15.5	8	18	6	——	Brisk	.09	
10	18.5	11.5	20	10	SW	Strong	.36	
11	15.7	5	19.5	2	——	Brisk	.01	
12	16	10	21.7	10	——	Ditto	.20	
13	16	10.5	23	8	——	Strong	.03	
14	15.5	9.5	23	9	——	Little	.02	
15	18	3.5	23.5	1	S	Ditto	.06	
16	15.5	10.5	19.5	8.5	E	Ditto		
17	14	11.2	15.5	10	——	Ditto		
18	17	11.7	19.5	10.5	S	Ditto	.13	
19	17.5	2	24.5	0	W	Ditto	.01	
20	12.8	2.2	16.7	0.5	S	Ditto		
21	13.5	5.5	17.5	3	SE	Ditto		
22	9.5	1.5	22	— 1.5	E	Ditto		
23	15	4	21	2	SW	Ditto	.01	
24	12	8	17	7.5	——	Ditto	.01	
25	12.5	8.2	17	7.5	W	Ditto		
26	12.3	8.5	16.7	8.5	SW	Ditto		
27	11.5	1.2	17	— 1.5	NW	Brisk	.15	
28	6	—5	9	—10	——	Ditto		
29	3	—2.5	4	— 6	N	Ditto	.42	
30	4.5	—5	9	—10	NW	Ditto		
31	5	—3.5	9.5	— 8.5	——	Little		
Cent	13.35	4.97	17.50	2.78			3.62	
Fah.	56.03	40.94	63.50	37.00				

Mean Pressure from the 3 daily observations	29.838 inches.		Fahr.
—— Temperature.....Ditto.....	9°.12	or	48.41
—— Dew Point.....Ditto.....	8°.63	—	47.53
—— Degree of Dryness....Ditto.....	0°.49	—	0.88
—— Degree of Moisture....Ditto.....	.973		
—— Force of Vapour.....Ditto.....	.370 inch.		
Least observed degree of Moisture.....	.654		
Maximum Temperature in the Shade....	18°.5	or	65.30
Minimum Temperature in ditto.....—	5°.0	—	23.0
Maximum Temperature in the Sun.....	24°.5	—	76.10
Minimum of Terrestrial Radiation.....—	10°.0	—	14.00
Mean Temperature of External Air.....	9°.16	—	48.49

WINDS.

North	1 days.	N. East.....	0 days.
South	7 ..	S. East.....	2 ..
East.....	3 ..	N. West	4 ..
West.....	3 ..	S. West.....	11 ..

31 days.

Amount of Rain ..... 3.62 inches.

NOVEMBER.

		Morning.					Noon.					Night.				
1836.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
☾ T.	1	30.157	0	0	—	Frosty	30.045	5	5	—	Cold and Wet	30.015	6.5	6.5	—	Cloudy & Fine
W.	2	29.979	9	9	—	Hazy	29.939	11.5	11.5	—	Drizzly	29.965	6.5	6.5	—	Ditto
Th.	3	—.892	6	6	—	Cloudy	—.741	10	7	3	Very Fine	—.665	6	6	—	Clear & Windy
F.	4	—.607	5.5	5.5	—	Overcast	—.540	7.5	7.5	—	Rain	—.369	5.5	5.5	—	Hazy
S.	5	—.157	6.5	6.5	—	Cloudy	—.251	7.5	2	5.5	Cloudy	—.456	1	1	—	Clear
S.	6	—.498	0	0	—	Frosty	—.417	7	3	4	Ditto	—.480	0	0	—	Ditto
M.	7	—.658	0	0	—	Ditto	—.758	7	7	—	Fine	—.853	—3	—3	—	Do. & Frosty
T.	8	30.083	—2	—2	—	Sharp Frost	30.068	4	4	—	Clear	30.107	—1	—1	—	Frosty and Foggy
● W.	9	—.051	7	7	—	Hazy	29.980	11	9	2	Overcast & Fine	29.740	8	8	—	Rain
Th.	10	29.634	10	10	—	Cloudy and Damp	—.649	13	11	2	Very Fine	—.660	3	3	—	Clear
F.	11	—.414	9	9	—	Rain	—.514	9.5	9.5	—	Heavy Rain	—.665	7	7	—	Cloudy, Fine
S.	12	—.852	3	3	—	Foggy	—.879	6.5	6.5	—	Foggy	—.855	6.5	6.5	—	Clear and Do.
S.	13	—.687	10	10	—	Rain	—.656	13.5	13.5	—	Cloudy & Fine	—.543	13.5	13.5	—	Rain
M.	14	—.659	4	4	—	Clear	—.704	7.5	5	2.5	Fine	—.712	1.5	1.5	—	Clear
☽ T.	15	30.018	0.5	0.5	—	Do. and Frosty	30.163	7.5	5	2.5	Overcast	30.037	7	7	—	Cloudy
W.	16	29.989	7	7	—	Fine	29.881	10.5	10.5	—	Cloudy	29.636	8.5	7.5	1	Ditto
Th.	17	—.483	7.5	7.5	—	Overcast	—.463	8.5	7	1.5	Very Fine	—.142	7	7	—	Stormy Rain
F.	18	—.114	3	3	—	Clear	—.175	7	3	4	Fine	—.242	1.5	1.5	—	Slightly Clouded
S.	19	—.298	1	1	—	Slight Frost	—.237	5	5	—	Rain	—.310	4	4	—	Stormy Showers
S.	20	—.831	3	3	—	Fine	—.976	6	6	—	Clear	30.084	1	1	—	Clear
M.	21	30.165	0	0	—	Frosty and Foggy	30.138	3	3	—	Foggy	—.038	2.5	2.5	—	Drizzly
T.	22	29.987	3	3	—	Foggy	29.954	4	4	—	Ditto	29 647	6.5	6.5	—	Rain
○ W.	23	—.301	6.5	6.5	—	Dense Clouds	—.377	7	3	4	Boisterous	—.504	5.5	4.5	1	Clear & Fine
Th.	24	—.516	2	2	—	Very Clear	—.579	6	3	3	Clear & Cold	—.624	—2	—2		Do. & Frosty
F.	25	—.768	—2.5	—2.5	—	Sharp Frost.	—.793	2	2	—	Hazy	—.657	1	1	—	Rain
S.	26	—.801	3.5	3.5	—	Drizzly	—.330	3.5	3.5	—	Foggy	—.353	10	10	—	Cloudy
S.	27	—.581	9	9	—	Overcast	—.465	13	13	—	Cloudy	—.458	12.5	12.5	—	Ditto
M.	28	—.279	13	13	—	Rain	—.284	13.5	13.5	—	Boisterous	—.250	11.5	11.5	—	Rain
T.	29	—.016	13.5	13.5	—	Ditto	—.093	9	9	—	Ditto	—.525	8	8	—	Clear
W.	30	—.525	6	6	—	Fine	—.495	9	9	—	Rain	—.693	4	4	—	Ditto
Cent.		29.666	4.80	4.80	0.00		29.651	7.83	6.70	1.13		29.642	4.98	4.92	0.06	
Fah.			40.64	40.64	0.00			46.09	44.06	2.03			40.96	40.85	0.11	

NOVEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	11.5	3.2	11.7	2.5	SW	Little	.07	November, proverbially gloomy, certainly did not this year vary from its usual characteristic; for the mean maximum power of solar rays was not 4° Fahr. above that of the temperature in the shade; and the amount of rain was upwards of 3½ inches, a quantity greater than has fallen in any corresponding month for many years, and more than an inch and half above the usual mean. On the 29th it blew a tremendous hurricane from West. The Garden suffered little; but the damage to buildings, &c. in and about London was very great. In the parks many large trees were uprooted. At Chiswick, a fine Cedar of Lebanon, 90 years old, and 4 feet in diameter, belonging to the Duke of Devonshire, was blown down.
2	13	2	13	0	——	Ditto	.02	
3	12.5	4	16	2	——	Brisk	.22	
4	8.5	5	8.5	3	——	Little	.14	
5	9.5	—2.7	13.5	—6.5	NW	Brisk		
6	8.5	—2	13	—6	SW	Ditto		
7	7.2	—5	11.5	—8	——	Little		
8	11	—3.2	12	—7.5	——	Ditto	.05	
9	13	7.5	15	7	——	Brisk	.28	
10	13.5	1	17.5	—2	——	Ditto	.30	
11	10.5	1.5	10.5	0.5	S	Little	.10	
12	11.5	2	11.5	0	SW	Ditto	.14	
13	13	3.5	13.5	0.5	S	Brisk	.17	
14	8.5	—0.5	12.5	—3	W	Ditto		
15	9	3.5	11.5	1	SW	Little		
16	11	7	15.5	5	——	Ditto	.03	
17	10	3.5	16	1	——	Ditto	.08	
18	9	—0.5	15	—3.5	W	Ditto		
19	8	2.3	11	0	——	Brisk	0.5	
20	8	—1	14.5	—4.5	NE	Ditto		
21	5	2	10	0	SW	Little	.08	
22	10.5	3	14	3	SE	Ditto	.16	
23	8	2.3	9	—0.5	NW	Strong		
24	6.7	—3.5	10	—7.3	W	Little		
25	5	0	5	—1	SW	Ditto	.16	
26	10	4.5	10	4.5	SE	Ditto	.16	
27	13.5	10.5	14	7	SW	Ditto	.07	
28	14.5	8.5	15	7.5	——	Strong	.45	
29	11.5	5	15	2.7	W	Ditto	.56	
30	9	0	9.5	—1.7	NW	Little	.31	
Cent	10.01	2.72	12.02	—0.17			3.60	
Fah.	50 01	36.89	53.63	31.70				

Mean Pressure from the 3 daily observations 29.653 inches.

—— Temperature.....Ditto.....	5°.87	or	Fahr. 42.56
—— Dew Point.....Ditto.....	5°.47	—	41.84
—— Degree of Dryness.....Ditto.....	0°.40	—	0.72
—— Degree of Moisture.....Ditto.....	.974		
—— Force of Vapour.....Ditto.....	.302 inch.		
Least observed degree of Moisture.....	.705		
Maximum Temperature in the Shade.....	14°.5	or	58.10
Minimum Temperature in ditto.....	—5°.0	—	23. 0
Maximum Temperature in the Sun.....	17°.5	—	63.50
Minimum of Terrestrial Radiation.....	—8°.0	—	17.60
Mean Temperature of External Air.....	6°.36	—	43.44

WINDS.

North.....0 days		N. East.....1 days	
South.....2 ..		S. East.....2 ..	
East.....0 ..		N. West.....3 ..	
West.....5 .		S. West.....17 ..	
	30 days.		

Amount of Rain.....3.60 inches.

DECEMBER.

		Morning.					Noon.					Night.				
1836.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
☾ Th.	1	29.989	3	3	—	Foggy	30.013	5.5	5.5	—	Hazy	30.180	4	4	—	Overcast
F.	2	30.096	9	9	—	Rain	29.987	11	11	—	Cloudy	29.745	10	10	—	Stormy
S.	3	29.801	9.5	9.5	—	Ditto	—.671	10.5	10.5	—	Rain	—.911	12	12	—	Cloudy
S.	4	29.823	12	12	—	Overcast	—.767	13.5	13.5	—	Slightly Clouded	—.876	11	11	—	Fine
M.	5	29.888	12	12	—	Ditto	—.866	13	13	—	Overcast	—.949	9.5	9.5	—	Do. Clear
T.	6	30.010	10.5	10.5	—	Ditto	—.991	13	13	—	Cloudy & Fine	—.861	9.5	9.5	—	Cloudy & Fine
W.	7	29.556	9.5	9.5	—	Slightly Do.	—.446	10.5	10.5	—	Stormy Showers	—.579	5	5	—	Clear & Do.
● Th.	8	—.252	6.5	6.5	—	Ditto	—.222	7.5	7.5	—	Ditto	—.124	2.5	2.5	—	Clear, Lightning
F.	9	—.097	4	4	—	Ditto	—.073	6	5	1	Cloudy & Cold	28.963	1.5	1.5	—	Clear
S.	10	—.190	1	1	—	Clear & Frosty	—.266	5	5	—	Slightly overcast	29.432	0	0	—	Ditto
S.	11	—.639	1	1	—	Overcast	—.620	4.5	4.5	—	Overcast	—.703	—2	—2	—	Slight Fog
M.	12	— 603	2	2	—	Rain	—.490	9.5	9.5	—	Rain	—.298	10	10	—	Stormy
T.	13	—.263	7	7	—	Overcast	—.244	9.5	9.5	—	Cloudy	—.268	5	5	—	Clear
W.	14	—.321	2	2	—	Clear	—.367	7	5	2	Do. & Cold	—.668	4	4	—	Do. and Fine
☽ Th.	15	—.989	1.5	0	1.5	Ditto	30.055	4	4	—	Fine	—.796	2.5	2.5	—	Overcast
F.	16	—.780	2	2	—	Ditto	29.828	6.5	5	1.5	Ditto	30.051	2.5	2.5	—	Clear
S.	17	30.151	—0.5	—0.5	—	Frosty	30.153	6.5	6.5	—	Overcast	—.102	8.5	8.5	—	Overcast & Fine
S.	18	—.122	9	9	—	Fine	—.110	10	10	—	Do. & Fine	—.153	10	10		Ditto
M.	19	—.196	8	8	—	Overcast	—.163	10	10	—	Fine	—.149	7.5	7.5	—	Ditto
T.	20	—.205	5	5	—	Clear	—.255	7	7	—	Foggy	—.294	4.7	4.7	—	Foggy
W.	21	—.304	5	5	—	Foggy	—.304	7.5	7.5	—	Hazy	—.342	5	5	—	Slight Clouded
Th.	22	—.399	5	5	—	Ditto	—.354	7	7	—	Foggy	—.092	8	8	—	Rain
○ F.	23	29.886	3.5	3.5	—	Cloudy	29.837	7	0	7	Clearing	29.702	1	1	—	Cloudy & windy
S.	24	—.756	0	0	—	Slight Snow	—.776	1	0	1	Clear & Cold	—.841	—2	—2	—	Clear
S.	25	—.826	—2	—2	—	Snowing	—.741	—1	—4.5	3.5	Stormy	—.707	—1	—1	—	Stormy
M.	26	—.635	—2	—2	—	Ditto	—.596	0	0	—	Do. with Snow	—.626	—1	—1	—	Sleet
T.	27	—.657	—1	—1	—	Ditto	—.679	—0.5	—0.5	—	Snowing	—.826	—2	—2	—	Cloudy
W.	28	—.987	0	0	—	Overcast	—.958	1	1	—	Overcast	—.997	—1.5	—1.5	—	Ditto
Th.	29	30.065	—1	—1	—	Snowing	30.056	1.5	1.5	—	Ditto	30.028	—1.5	—1.5	—	Ditto
F.	30	—.113	—1.5	—1.5	—	Hazy	—.126	0	0	—	Snowing	—.193	—2.5	—2.5	—	Cloudy & Cold
☾ S.	31	—.337	—2.5	—2.5	—	Ditto	—.365	0	0	—	Overcast	—.474	—1.5	—1.5	—	Ditto
Cent.		29.836	3.79	3.74	0.05		29.819	6.24	5.73	0.51		29.836	3.80	3.80	0.00	
Fah.			38.82	38.73	0.09			43.23	42.31	0.92			38.84	38.84	0.00	

DECEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	10	3.3	10.5	1.5	SW	Little		Rain was of frequent occurrence during the first part of this month; and throughout, the intervals were seldom illuminated by the sun's rays, as will be evident from an inspection of the adjoining columns, by which it appears that their mean is scarcely a degree above that of the shade. The wind was from warm points up to the 23d, when it shifted to the north for two days, and then changing to the north-east, brought on, from that quarter, the heaviest snow storm perhaps ever recorded at the same period of the season. It was general over Britain, and was drifted in some places to the depth of more than 30 feet. The obstruction to travelling was unprecedented since modern improvements have rendered conveyance rapid and certain. The snow continued, and occasionally received accessions, to the end of the month.
2	11.5	3.3	11.5	7	——	Strong	.04	
3	13	10	13	9	——	Brisk	.06	
4	13.5	11	13.5	9.5	——	Ditto	.14	
5	13	8	13.5	5.8	W	Strong	.02	
6	12.2	9	13.5	7	SW	Brisk		
7	12.5	5	13	2	S	Strong	.52	
8	8.5	2.2	8.5	0	W	Ditto	.04	
9	7	0.5	7.5	—2.5	SW	Brisk	.02	
10	6	—1	6	—4	W	Little		
11	5	—3	5	—7.5	SW	Ditto	.17	
12	10.5	4.6	10.5	2.2	——	Ditto	.14	
13	10.6	2	11	—1	——	Brisk		
14	11	1.8	11	—1.5	——	Ditto	.02	
15	7	—1	7	—5.5	W	Little	.16	
16	4.5	—0.5	8.5	—2.5	NW	Brisk		
17	11	4	11	4	SW	Little	.01	
18	11	6.5	11.5	4	S	Ditto		
19	11	5.5	12	3.5	SW	Ditto	.05	
20	7.3	4	7.7	3	——	Ditto		
21	8	3	8	0	NW	Ditto		
22	9	2	9.5	0	SW	Ditto	.09	
23	8	—0.5	8.5	—2.5	N	Ditto		
24	1.8	—3	3	—5.8	——	Brisk		
25	1	—2	1	—4	NE	Ditto		
26	1.8	—0.8	2	—1	——	Strong		
27	0.5	—2	0.5	—3.5	——	Brisk		
28	1.5	—3.3	1.5	—5	——	Little		
29	2	—2.5	2	—4	——	Ditto		
30	0	—3	1.5	—5.7	N	Ditto		
31	0	—2.5	0	—5	NE	Ditto		
Cent	7.41	1.95	7.84	0.05			1.48	
Fah.	45.34	35.51	46.11	32.09				

Mean Pressure from the 3 daily observations	29.830 inches.	
—— Temperature .....Ditto.....	4°.61	Fahr. 40.29
—— Dew Point .....Ditto.....	4°.42	39.95
—— Degree of Dryness .....Ditto.....	0°.19	0.34
—— Degree of Moisture .....Ditto.....	.985	
—— Force of Vapour.....Ditto.....	.279 inch.	
Least observed degree of Moisture	.645	
Maximum Temperature in the Shade.....	13.5	56.30
Minimum Temperature in ditto.....	—3.3	26.06
Maximum Temperature in the Sun.....	13.5	56.30
Minimum of Terrestrial Radiation.....—7.5		18.50
Mean Temperature of External Air.....	4.68	40.42

WINDS.

North	3 days	N. East	6 days
South	2 ..	S. East	0 .
East	0 ..	N. West	2 ..
West	4 ..	S. West	14 ..

31 days.

Amount of Rain .....1.48 inch.

Monthly Mean Pressure, Temperature, and Dew Point, &c. of 1836; deduced from the Observations recorded in the preceding Journal.

1836. Months.	Pressure. Max.	Min.	Med.	Range of Barom.	Mean at Morn.	Noon.	Night.	Mean of the three Observations.	Temperature. In the Shade. Max.	Min.	Med.	Mean at Morn.	Noon.	Night.	Mean of the three Observs	In Sun's Rays. Max.	Min.	Terrestrial Radiation Max.	Min.	Med. of Sun and Rads.
Jan. .	30.733	28.978	29.968	1.755	29.980	29.973	29.951	29.968	12.5	—10.5	3.87	2.21	5.29	3.50	3.66	13.0	—1.0	5.5	—13.5	1.92
Feb. .	30.527	28.688	29.841	1.839	29.910	29.828	29.848	29.862	12.0	— 7.2	3.36	1.56	5.75	2.55	3.28	20.5	3.0	6.0	—13.5	3.62
March	30.460	28.655	29.560	1.805	29.573	29.563	29.584	29.573	20.6	— 3.5	7.29	5.72	9.96	5.22	6.97	30.7	1.3	5.0	—10.2	7.37
April	30.412	29.034	29.888	1.378	29.860	29.867	29.891	29.872	17.3	— 2.5	7.40	6.75	10.70	5.33	7.59	29.0	11.2	8.0	— 9.2	9.25
May .	30.548	29.480	30.181	1.068	30.195	30.167	30.183	30.181	23.2	— 0.5	11.20	11.18	16.74	7.80	11.90	35.0	20.0	7.0	— 6.0	14.91
June.	30.325	29.571	29.944	0.754	29.953	29.933	29.938	29.941	30.0	6.2	16.35	16.96	21.05	14.13	17.38	48.5	25.0	13.5	3.7	19.44
July .	30.418	29.441	30.002	0.977	30.004	30.000	30.002	30.002	34.7	6.0	17.57	17.61	22.22	14.60	18.14	53.5	22.5	17.0	4.0	23.48
Aug.	30.340	29.602	30.044	0.738	30.057	30.037	30.033	30.042	29.0	4.5	15.90	15.30	20.92	13.67	16.63	35.0	21.0	13.0	2.3	19.22
Sept.	30.288	29.270	29.885	1.018	29.844	29.885	29.897	29.875	23.0	0.0	12.67	12.23	15.93	10.08	12.74	34.5	15.0	12.0	— 3.7	14.55
Oct. .	30.495	28.940	29.836	1.555	29.831	29.841	29.843	29.838	18.5	— 5.0	9.16	8.32	11.92	7.12	9.12	24.5	4.0	11.0	—10.0	10.14
Nov..	30.165	29.016	29.655	1.149	29.666	29.651	29.642	29.653	14.5	— 5.0	6.36	4.80	7.83	4.98	5.87	17.5	5.0	7.5	— 8.0	5.92
Dec. .	30.474	28.963	29.830	1.511	29.836	29.819	29.836	29.830	13.5	— 3.3	4.68	3.79	6.24	3.80	4.61	13.5	0.0	9.5	— 7.5	3.94
Aver.	30.432	29.136	29.886	1.296	29.892	29.880	29.887	29.886	20.73	—1.73	9.57	8.87	12.88	7.73	9.82	29.60	10.58	9.58	— 5.96	11.14

1836. Months.	Hygrometer indicating Dew Point. Mean Dew Point at Morn.	Noon.	Night.	Mean Dew Point.	Mean Force of Vapour.	Mean degree of Dryness.	Mean degree of Moisture.	Least degree of Moisture.	Scale of the Winds. N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Days.	Rain. In. Pts.
Jan. .	2.08	4.42	3.19	3.23	277	0.43	985	715	0	2	3	1	11	9	5	0	31	2.01
Feb. .	1.06	3.68	1.93	2.22	247	1.06	943	640	5	2	3	0	1	13	2	3	29	1.61
March	5.34	8.22	4.71	6.09	315	0.88	943	609	0	0	1	0	8	17	4	1	31	3.30
April	5.55	7.45	4.81	5.94	312	1.65	897	437	5	3	2	2	1	9	5	3	30	2.88
May .	8.31	7.45	6.88	7.48	345	4.42	768	310	1	13	9	3	1	2	1	1	31	1.01
June.	14.33	15.28	13.38	14.33	522	3.05	842	357	0	1	1	1	12	10	4	1	30	1.66
July .	14.50	14.34	13.44	14.09	514	4.05	790	348	1	0	0	1	6	9	10	4	31	1.78
Aug.	13.72	14.78	13.00	13.83	506	2.80	853	452	1	6	4	1	6	6	6	1	31	1.97
Sept.	11.97	12.82	9.97	11.58	439	1.16	926	616	4	4	0	0	5	9	8	0	30	3.81
Oct.	8.21	10.66	7.01	8.63	370	0.49	973	654	1	0	3	2	7	11	3	4	31	3.62
Nov.	4.80	6.70	4.92	5.47	302	0.40	974	705	0	1	0	2	2	17	5	3	30	3.60
Dec. .	3.74	5.73	3.80	4.42	279	0.19	985	645	3	6	0	0	2	14	4	2	31	1.48
Aver.	7.80	9.29	7.25	8.11	367	1.71	905	540	21	38	26	13	62	126	57	23	366	28.73

The preceding Table, as regards Temperature, and the Dew Point, is in terms of the Centigrade Thermometer; the following is a reduction of the same to Fahrenheit's scale.

1836.	Temperature.												Hygrometer indicating Dew Point.				
	In the Shade.			Mean at			Mean of the three Observa-vations.	In Sun's Rays.		Terrestrial Radiation.		Med. of Sun and Radia-tion.	Mean Dew Point at			Mean Dew Point.	Mean degree of Dryness.
Months.	Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.		Morn.	Noon.	Night.		
Jan. .	54·5	13.1	38.96	35·9	41·5	38.3	38.58	55·4	30.2	41·9	7·7	35·45	35·7	39·9	37·7	37·8	0·77
Feb. .	53.6	19.4	38.0	34.8	42.3	36.6	37·9	68.9	37·4	42.8	7·7	38.52	33·9	38.6	35·4	36.0	1·91
March	69.0	25.7	45.1	42.2	49·9	41.4	44·5	87.2	34·3	41.0	13.6	45.27	41.6	46.7	40.4	42·9	1.58
April	63.1	27.5	45·3	44.1	51.2	41.6	45.6	84.2	52.1	46.4	15.4	48.65	42.0	45·4	40.6	42.7	2.97
May .	73.7	31.1	52.1	52.1	62.1	46.0	53.4	95.0	68.0	44.6	21.2	58.83	46.9	45·4	44.0	45·4	7·96
June.	86.0	43.1	61.4	62.5	69.8	57·4	63.2	119.3	77.0	56.3	38.6	66.99	57.8	59·5	56.0	57.8	5·49
July .	94.4	42.8	63.6	63.6	71.9	58.2	64.6	128.3	72.5	62.6	39.2	74.27	58.1	57.8	56.2	57·3	7.29
Aug.	84.2	40.1	60.6	59.5	69.6	56.6	61.9	95.0	69.8	55.4	36.1	66.29	56.7	58.6	55·4	56.8	5.04
Sept.	73.4	32.0	54.8	54.0	60.6	50.1	54.9	94·1	59.0	53.6	25·3	58.20	53.5	55.0	49.9	52.8	2.09
Oct. .	65.3	23.0	48.4	46.9	53.4	44.8	48.4	76.1	39.2	51.8	14.0	50.25	46.7	51.2	44.6	47·5	0.88
Nov .	58.1	23.0	43.4	40.6	46.0	40.9	42.5	63.5	41.0	45·5	17.6	42.66	40.6	44.0	40.8	41.8	0.72
Dec. .	56.3	26.0	40.6	38.8	43.2	38.8	40.2	56.3	32.0	49.1	18.5	39.10	38.7	42.3	38.8	39·9	0.34
Aver.	69.31	28.90	49.38	47.96	55.18	45.91	49.68	85.28	51.04	49.25	21.24	52.06	46.04	48.72	45.02	46.59	3.09

XXIII. *An Account of some further Experiments, made in the Garden of the Society, in the year* 1836, *relative to the Cultivation of Potatoes. By Mr.* Robert Thompson *Under Gardener in the Fruit Department.*

Read December 6, 1836.

The results of various experiments upon this subject having been already published in the Transactions, it will be proper briefly to refer to them on this occasion.

In the year 1831, experiments were made with the view of ascertaining the effect of planting the sets of Potatoes much wider apart than usual, in order to give the foliage a greater exposure to light. Whole tubers were accordingly planted in spaces containing 16 square feet. The result was, that strong growing sorts, including a number of Mr. Knight's seedlings, produced fully an average, whilst a few gave a very great crop. But although one of the latter produced at the rate of 21 t. 13 cwt. 59 lb., a weak growing sort produced only 1 t. 5 cwt. 92 lb. The vigorous could avail themselves of their ample space, which they occupied with their stems and foliage to the full extent; the weaker could not. Hence the propriety of suiting the distance of planting to the vigour of the sort.*

In the year 1832, experiments were made with regard to the relative produce of sets from *whole tubers*, and from *single eyes*. The result was in favour of the latter by upwards of 7 cwt. per acre, and considerably more on comparison of the clear produce after deducting the weight of sets employed in both cases.†

* See Transactions, Vol. I. Second Series, p. 153.

† See Transactions, Vol. I. Second Series, p. 445.

The trials of 1831 gave rise to further experiments with regard to the *space* between the sets. Accordingly, in 1834, another experiment was made, for the purpose of ascertaining the most preferable distance at which the sets of commonly cultivated varieties should be planted; and at the same time a repetition was made of the comparison between *whole tubers* and *single eyes*. The distances between the rows were $2\frac{1}{2}$ feet, 2 feet, $1\frac{1}{2}$ foot and 6 inches. The result with regard to distance, was, that the crop was found to be greatest where the distance between the rows was most in accordance with the height of the stems; and the most uniformly abundant produce was from rows 2 feet apart. The comparison between *whole tubers* and *single eyes* was still found to be in favour of the latter.*

The experiments in the present season have been made with regard to

First, *the time of planting;* first week in March, and first week in April.

Second, *the sets;* whole tubers, bases, and points of tubers.

Third, *the depth;* 3 inches, 4 inches, 6 inches, and 9 inches.

A piece of ground in the kitchen garden which was previously in grass was trenched and planted with the Bread-fruit Potatoe, a sort which for productiveness is perhaps unequalled near London by any other of so fine a quality. The ground was divided very exactly into six equal parts. Three of these were planted respectively with whole tubers, bases, and points of tubers in the first week of March; the other three compartments in a similar manner in the first week in April. The following table exhibits the results, calculated for an acre.

* See Transactions, Vol. I. Second Series, p. 524.

Time of planting.	Sets.	Weight planted.			Weight taken up.			Deduct weight planted for clear produce.		
		T.	Cwt.	lbs.	T.	Cwt.	lbs.	T.	Cwt.	lbs.
1st week in March.	Whole Tubers	1	11	22	15	2	45	13	11	23
	Base of Tubers	1	0	89	15	6	108	14	6	19
	Points of Tubers.	0	10	44	18	1	28	17	10	96
	Aver.	1	0	89	16	3	$60\frac{1}{3}$	15	2	$83\frac{1}{3}$
1st week in April.	Whole Tubers	1	11	22	15	14	74	14	3	52
	Base of Tubers	1	0	89	14	11	18	13	10	41
	Points of Tubers	0	10	44	14	8	74	13	18	30
	Aver.	1	0	89	14	18	18	13	17	41
	Difference in favour of the March plantation							1	5	$42\frac{1}{3}$

It appears from the above, that the March plantation exceeds that of April by 1 ton 5 cwt. $42\frac{1}{3}$ lbs.; and farther, that the average produce of the points of tubers exceeds that of whole tubers by 1 ton 16 cwt. 87 lbs., and of the base of tubers by 1 ton 15 cwt. $94\frac{1}{2}$ lbs. Consequently, the lowest produce is from the whole sets; a little above the latter is that from the base; and the points of the tubers rank considerably above either. This superiority appears to take place in the March planting; for of those planted in April the whole tubers had the advantage with regard to produce.

Sir George S. Mackenzie obtained a different result from different parts of the tuber. Cuts from the base gave a return of 26 lbs. middle $20\frac{1}{2}$ lbs. and points 24 lbs.; but, from the following communication, it appears that he was not fully satisfied in regard to the experiment having been fairly made.

"The experiment, the result of which I communicated last year, comparing the respective produce of the cuts taken from the root end, the middle, and the rose end of a Potatoe, was made, as I mentioned, by the gardener then in my service. Last spring I directed the experiment to be repeated; but my gardener misunderstand-

ing me, planted root-cuts, &c. from different Potatoes of one sort, instead of all the cuts to be compared being from one tuber. The result is as follows :—

Root end cuts 26 lbs. Middle 20½ lbs. Rose or crown end 24 lbs.

There were 20 cuts of each sort, planted at the usual distance, and a single eye in each cut. Though this does not give a strict comparison of cuts from one tuber, yet it may be regarded as giving a fair mean result. The inferiority of the middle cuts is remarkable; and it appears of some importance to repeat the experiment with different varieties of the Potatoe, attending carefully that only one eye shall be in each cut. When the eyes are crowded, as in the crown or rose end, they should be all cut away but one. I am aware that it has been the universal opinion that the crown end is the most productive; but this appears to have been taken for granted, and not deduced from experiment. The great number of eyes also at the crown end, may have contributed to an increased produce. In planting a field it is always advantageous to have at least two eyes, lest one should be cut off by frost."

In order to try the effects of different depths of planting, a quarter was divided into 4 equal parts, and planted with sets in the second week in April, at the respective depths of 3, 4, 6, and 9 inches. The results, computed for an acre are as follows :

Depth.	Produce.		
Inches.	T.	Cwt.	lbs.
3	13	0	14
4	14	1	18
6	14	11	4
9	13	0	111

The greatest produce was from the plantation at 6 inches deep; and next to it, from that at 4 inches. Those planted only 3 inches deep gave the least return. Many of the sets buried 9 inches did

not vegetate, or at least failed in reaching the surface. This was also found to be the case by HASLER HOLLIST, Esq. in 1835, when he adopted the mode of deep planting. The results of his experiments are detailed in the following note.

"I have this year renewed my experiments on the Potatoes you sent me in 1833 from Mr. KNIGHT's Collection.

I planted in the latter end of March and at intervals during the whole month of April, but I am satisfied I was, contrary to the received opinion, too early in some instances, particularly with Mr. KNIGHT's No. 2.

I also planted at various depths, 9 inches, 7 inches, and from 5 to 6. In nearly every instance the shallow planting has succeeded, but, in none the deepest, and in the latter case many of the sets have not vegetated at all, many more have not reached the surface.

A few single eyes of the Downton Yam, literally parings, have yielded very nearly as much as the full sized sets. I think I could say quite as much if the tubers from which they were cut were added to their actual produce.

Some of these statements appear so singular that I feel a hesitation in mentioning them, but whether from the unfavourable season, mismanagement, or what other cause I know not, certain it is that these are my results. P.S. The soil is a loamy sand and friable."

XXIV. *On the Cultivation of the Melon in open Frames.* *By* John Williams, Esq. *C. M. H. S.* *In a Letter to the Secretary.*

Read February 21, 1837.

Dear Sir,

When I had the pleasure of meeting you at Downton in September 1835, I brought with me specimens of Melons ripened under a covering of glass, but laterally exposed on all sides to free ventilation. I recollect the flavour of one or two of the kinds I produced was much commended by the horticultural party then on a visit to Mr. Knight; and I promised to send you the particulars of my mode of culture. But as the summer of 1835 was favourable, I was desirous of trying my plan a second season, before I submitted it to the consideration of the Horticultural Society.

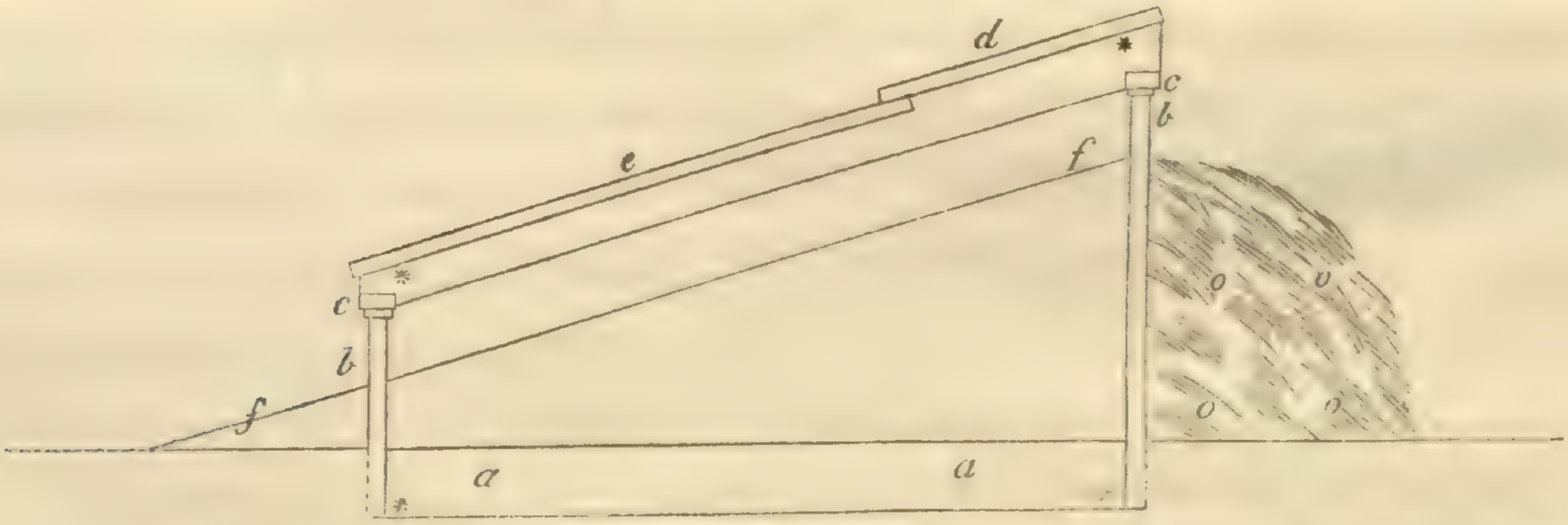
Last summer, although the weather was unusually dry, it was cold, the influence of the sun on the surface appearing to be swept away by the frequent gales of wind we experienced from the western ocean in June, July, and September. The only steady warm weather we were favoured with (according to my journal) was in August, when we had about eight or ten days of easterly wind. My melons, however, planted under the open frame, produced a most abundant late crop, superior in quality to any I partook of ripened under glass frames with closed sides.

Nothing can be more simple than the construction of my glass covering. I sink a shallow pit about nine inches or a foot deep in the ground, a strong wood frame is made the size of the intended bed to support the glass. My frame is 18 feet long, by 8 feet 3 inches wide, each light is divided into two parts, the upper part being the shortest. By this division the lights receive less injury

in being removed; and as wood props soon decay in the ground, I procured some small cast iron pipes two inches in diameter from our Gas Works, and by cutting the pipes a little above the moulding, this circular projection affords a secure shouldering for the wood frame to rest on; the lower end of the pipe goes into the ground, and is secured in its place by a few small stones rammed round it in the way of paving a street. Four long pipes support the upper, or north side of the frame, and four short ones, the lower or south side. The lower part of the pit is filled with a mixture of old leaves, the winter prunings of raspberry plants, and other twigs from wall trees and shrubs which every garden affords in the spring, to these I add a little horse litter and the first mowings of grass lawns, dusting in a little lime in powder, which hastens the decomposition, kills insects, and keeps up a durable bottom heat for some weeks. I find in the autumn the melon roots go through the whole, down to the bottom of the pit, and when removed in the following winter it affords an excellent compost for the garden. The Melon plants are raised in small pots, each plant being in a separate pot, the seed being sown in March or beginning of April; this will give time for each plant to be stopped *twice* in the seed-frame; and they will then afford female flowers from the lateral shoots, very soon after they are planted at the end of May. I usually, when first the plants are turned out of the seed pots, simply cover them with hand-glasses, say the first fortnight, each glass being furnished with a night-cap of matting to prevent the radiation of its accumulated interior heat in clear nights. The glasses of course are raised on one side, every sunny day to harden the plants as much as possible; and at the same time their use saves the trouble of moving, and endangering the breaking of the frames. The bottom compost is covered with about 9 or 10 inches of soil, and this soil with slates, the principal runners being carefully spread, and pegged down, that each leaf may receive its due portion of light. The

culture in this respect should be the same as that recommended in my paper on the growth of Melons in the open air (see Hort. Trans. vol. 5. p. 349.). The glass, when the bed is settled down, should be from 16 to 18 inches above the slates, so as to give room for the leaves to expand and receive motion from the wind, and the exhaling moisture to be carried away. As the bottom heat declines, I keep a supply of grass mowings, fallen leaves, and other garden refuse, as a lining on the north side. Green glass is much to be preferred to crown glass, the leaves are less liable to be burnt, in spots, by the sudden exposure to light in showery weather. The plants require no water at root after they have first got rooted in the bed, nor any syringing with water on the surface of the leaves; I found the latter did injury. One *single dusting* of *flowers* of *sulphur* thrown amongst the leaves in a calm morning or evening by means of the newly invented portable *fan engine*, I found last summer, effectually kept off the red spider, and thrips. Every gardener who saw the plants growing, expressed surprise at their healthy appearance, and the abundance of fruit.

End section of open Melon frame.



a a bottom of pit.

b b small cast iron props to support the wood frame c c. There are four short pipes in front and the same number at the back.

d The upper short light which slides over the lower one e. for the convenience of examining the fruits and leaves.

f f The covering of slates which extends on the south side beyond the frame to receive the Sun's rays, the hot air formed on the surface of these last slates, draws up in sunny weather when not interrupted by strong winds, and adds to the temperature of the space where the fruit and leaves are growing.

* * Depth from under side of glass to the bottom of pit, north side 5 feet, 5 inches.

* * Do. south side 2 feet, 10 inches.

o o o o Lining of grass, weeds, litter and other garden refuse, to be regularly supplied once or twice a week as it sinks, but not to rise higher than the surface of the slates.

Should this mode of cultivating Melons be adopted, I have no doubt of its succeeding; and from a trial I made with a late plant of the Ispahan Melon last summer, I have reason to think that this, and all the Persian varieties, except those which are liable to crack, can be matured by the end of August, or beginning of September, and afford a supply, till the middle of October, of very superior quality to any raised in close frames.

Believe me, Dear Sir,

Yours truly

JOHN WILLIAMS.

Pitmaston, Worcester, Feb 6, 1837.

XXV. *On the Cultivation of Figs. By* Thomas Andrew Knight, *Esq. F. R. S. President.*

Read Feb 21, 1837.

Few attempts have been made to cultivate the late fine varieties of the Figs of Italy in England; and those which have been made, have not, as far as my knowledge extends, been very successful. Our climate is too cold to ripen them in the open air; and in the stove a very large part of the fruit usually falls off abortively, and that which remains to ripen rarely or never, owing to the confined and damp state of the air, acquires nearly the greatest state of perfection, which it is capable of acquiring in the climate of England.

I made, during several successive years, attempts to ripen one of these, the Nerii Fig, which is one of the best, if not the best, of the Figs of Italy: and I have ultimately succeeded; and as the mode of management, which I have adopted, is peculiar only, and not difficult or expensive, and nearly similar to that under which the peach and nectarine will be found to acquire the highest state of perfection, I have thought the following account of it, worth communicating.

I begin to heat the house in the middle of February, and continue the fire till the fruit has acquired its first swelling in May. If artificial heat be still applied, the first formed fruit will fall off, and will be succeeded by other fruit which will also fall off abortively. The fruit, therefore, after it has acquired its first swelling is subjected to the influence of confined solar heat only, till it begins

to acquire maturity. Much air is then given; and, if the weather be not dry and bright, artificial heat is, to a small extent, again employed, to prevent the mature fruit becoming mouldy: and I believe, upon the evidence of many friends, who are well acquainted with the merits of that fruit in different southern climates, that it is rarely seen in a higher state of perfection than when ripened in the manner above described. The Fig is naturally ripened in shade, and in southern climates the birds and insects destroy, or injure, most of the best, before it has acquired its perfect state of maturity.

The peach and nectarine acquire the greatest state of perfection in the climate of England, (and the same treatment is, I believe equally applicable to every species of fruit which requires the aid of artificial heat) if they are to a certain extent brought forward early in the spring, and subsequently subjected to the influence of solar heat only.

I have succeeded in ripening the Nerii Fig in a very considerable state of perfection, by introducing the trees in pots against the back wall of a stove in February, and removing them to a greenhouse, out of which the plants had been taken in the middle of May; and this may be successfully done, whenever the vines in the stove are confined to the rafters.

I sent a sample of the Nerii Fig to the Horticultural Society in the last autumn; but it was very late in the season, in October. I could have sent a better sample to the first Meeting in September, but I expected to have had some finer fruit to send to the second Meeting; which I should have had; but some rats got into my house, and destroyed almost the whole of it. Some of the figs sent, though small, were, I believe, as to taste and flavour, not without merit, though very dissimilar to the fruit in its highest state of perfection: when its skin is so tender, that it is scarcely possible

to gather the fruit without breaking it; and I do not think that I could pack the fruit, when in that state, so that it would arrive in London in a state proper to be shown and tasted.

Almost all the spring fruit of my Nerii Fig-trees has fallen off immature, and none of it has ever ripened properly; and I doubt much whether its spring fruit ever possesses much merit in any climate.

XXVI. *Note on the Cultivation of the Cinnamon in England. By Mr.* William Buchan, *F.H.S. In a Letter to the Secretary.*

Read February 7, 1837.

Sir,

In November 1834 at the request of Lord Bagot I sent the Horticultural Society of London a plant of Cinnamon, the produce of seeds ripened at this place. The old plant has a very abundant crop of seeds upon it at this time, and I have now the pleasure of sending you some, which you will perceive very much resemble Acorns. They are generally in clusters of from three to seven in each.

The Cinnamomum verum, has long been in this country and has been described and figured. It is well known as a native of the Island of Ceylon, and other parts of the east; and has been introduced into South America and the Isle of France, where it is cultivated for the bark. It is generally considered a stove plant, but for several years I have grown one in a greenhouse conservatory, which situation suits it much better. The plant is now about ten feet high; and its stem is two and a half inches in diameter at one foot from the ground.

I am of opinion that with very little protection the Cinnamon would stand the winter in the open air in favourable situations in this country, and to induce those who have it in their power to give it a trial is the principal object of this communication.

The plant which produced the seeds I have sent you is an imported one, and has matured seeds here most seasons during the

last seven years at a very low temperature, which I consider of great importance; what may we not expect from its progeny? I think we may justly conclude that they will stand the winter without much protection in the southern counties of England and in South Wales.

Young seedling plants have been sent at his Lordship's request to most of the Botanical and Horticultural Gardens in the country, likewise to many private gardens in those parts of the country, where the climate is much more favourable to half hardy plants than it is in Staffordshire, and I have no doubt but that it will stand the winter in the open air at some of them with very little protection. It well deserves a trial in the neighbourhood of London, in Devonshire, Cornwall, and Pembrokeshire, where many of our greenhouse plants stand the winter without any protection whatever.

I am Sir,
your obedient humble servant,
WILLIAM BUCHAN.

Blithfield, 30th January, 1837.

Note by the Secretary.

The seeds alluded to in the preceding letter, were distributed among the Members present at the Meeting at which it was read.

XXVII. *Explanatory Notes respecting Six New Varieties of Vine recently introduced from Dukhun (Deccan).* By Colonel Sykes, *F. R. S.*

Read June 21, 1836.

It will probably be acceptable to the Horticultural Society to have some few explanatory notices respecting the six new species of Vines recently introduced by me into this country through the medium of the good offices of my friend Colonel Barr, Military Auditor-General, Bombay, and Mr. Vaupel, Secretary to the Horticultural Society at Bombay, and the obliging and disinterested care of Captain Pollock of the ship Raffles, who had charge of them on the voyage home; and in which Vines the Horticultural Society has participated with Lord Powis. These explanatory notices are the more necessary to remove a misconception prevailing in Europe regarding the natural habit of the Vine, a gentleman lecturing to a Mechanic's Institute lately, having stated that the profitable cultivation of the Vine was limited to countries having a mean temperature between 50° and 60° Fahr. and not within 30° of the Equator; whereas the whole of the six species adverted to are cultivated in Dukhun (Deccan) East Indies, between the 17th and 19th parallels of N. latitude, and longitude 73° 50′ and 76° 50′ east of Greenwich, at an elevation above the sea varying from 1500 to 1800 feet; the mean temperature of the year being from 77° to 78° Fahr. the mean temperature of the hottest months (April and May) 81° to 85°, and of the coldest 66° to 71° in December and January; the thermometer having been known to rise to 110° in a tent in April, and to sink for a few hours as low as 37° in the winter months.

The whole of the six species are cultivated by the natives in the Deccan, and produce luxuriantly and without any difficulty.

The finest of the species is the Hubshee, an elongated, truncated, fleshy, black grape, approaching a juicy plum in firmness but infinitely sweeter, (of which I send a drawing for exhibition to the Society). It is called the Hubshee by the Mahrattas from a supposed analogy in its blackness, and square robust figure to the Hubshees or natives of Abyssinia. It is also called काल्लि Kalee (black) to distinguish it from all the other species which are not black; but grapes have also a Sanscrit name and this is of some importance; as the very fact of their having a Sanscrit name is indicative of the remote period at which they were cultivated in India; for this remarkable language had ceased to be spoken probably for ages anterior to the Moosulman conquest; and it is not probable that the name by which grapes are called in Sanscrit, viz. द्राक्षा "Draxsha," would be a comparatively modern graft upon that ancient tongue. This species although fleshy, is juicy and of a very fine flavour; it is remarkable for its elongated and truncated form, some of the grapes measuring one and a quarter inch in length: in ripening they turn from green to dull red and finally black and do not pass through an intermediate stage of yellow.

The next most esteemed species is the Fukree an oblong, musky, green grape, slightly fleshy and not nearly so large as the Hubshee; it fruits abundantly.

The third is the Sahibee, a comparatively rare grape, it is more oval in form than the Fukree, is somewhat fleshy, not very juicy and has a slightly astringent and dry flavour, though sweet; it has a yellowish tinge of green when ripe, and is sometimes called Keernee from a certain resemblance to the fruit of the Mimusops Kauki.

The fourth is the Bè Dana, or seedless grape, as its name implies. It is very small, globular, yellowish green, thin skinned, and diaphanous, and is very delicious. It resembles the Kishmiss

of the Persian Gulf, from which the celebrated wine of Shiraz is made acccording to Sir WHITELAW AINSLIE.

The fifth kind is more abundantly cultivated than the others, and from its consequent cheapness is more accessible to the people at large, it is a large globular, thin skinned, very juicy grape, green at first, passing to a shade of yellow, and terminating, when fully ripe, in a brown Indian red on one side of the grape. There is a good deal of latent acid in it although the first flavour is sweet. It is called Ahbee, which means watery.

The sixth kind I cannot give any account of at the present moment, as unfortunately Mr. VAUPELL's scientific details have not yet reached me. I shall be able, I hope, to supply the omission at a future period when I hear from him; but the species must either be the Sooltanee or the Sukree, both kinds being met with in Dukhun. The whole of the above grapes ripen during January, February and March, and they are occasionally seen for sale in all April.

The mode of treatment is different in different vineyards; the most usual plan is to keep them low, but not quite so low as is done in France; but some gardeners grow them upon trellis work. The vines produce two fruitings annually; the first in the early part of the year being sweet; the second occurring in September, being acid. For the sweet fruiting the vines are pruned the latter end of September, or in October; they are generally kept the height of a man; and in pruning them only two or three shoots are left. The leaves are removed, and the bark cleaned; a basket full of goat's dung, or if it be not procurable, a basket full of cow's dung, is put to the roots; and they are inundated from the garden well five times a month, the earth being previously loosened about the roots. At the period of budding the Vines are subject to the attacks of a small insect which destroys the buds; each Vine is therefore shaken three times daily for eight or nine days. After fruiting the same process is followed to produce the acid crop when a *full* acid crop is desired; but it appears to me that the practice must be

injurious to the plants. Should the rains prove abundant, of course watering is unnecessary in the second crop. The acid grapes are used by the natives for preserves, and for a peculiar kind of pickle. The most expensive kind is the Hubshee, which, when they first come in, sell at the rate of a shilling a pound, but afterwards cheapen, to about three or four pounds for a shilling. The Ahbee sell, according to the time and the quantity in the market, from four pounds to twelve pounds for a shilling; Sahibee six pounds for a shilling in January and February; Bèdana, in the same months, four pounds. In addition to the above the Portugal round black grape is met with at Poona but, it is not held in estimation. It may not be unamusing to know, in illustration of Æsop's "Fox and the Grapes," that the principal depredators in vineyards in Dukhun (Deccan) are the Fox's congeners the jackalls, troops of which commit such ravages at the period of the ripening of the fruit in spite of persons being stationed at night to protect the vineyard, as to occasion great loss to the owners.

Regarding the range of the growth of the Vine within the tropics in India, I am enabled to state on the authority of that distinguished observer, Sir Whitelaw Ainslie, the author of the Materia Medica of India, that a very fine species of white grape (apparently the Fukree), flourishes at Pondicherry, on the Coromandel coast, in lat. 11° 56′ N. and long. 79° 58′ E. of Greenwich; consequently six degrees nearer to the equator than the grapes grown in the Deccan, and in a much higher mean temperature.

I have enumerated seven kinds of grapes as being met with in the market in Dukhun, viz. the Hubshee, or काली *Kalee*, the आबि *Ahbee*, or Bhokree, the फक्री *Fukree*, the साहिबि *Sahibee*, the बेदाणा *Bè Dana*, the सुलतानी *Sooltanee*, and the षक्री *Suckree*, or Sugared; but I am not satisfied that the Sooltanee is not a variety of the Ahbee, and the Suckree of the Bedana. In a conversation with a Moosulman of the name of Ali Khan, of the village of Chicholee, Turruf Boeehra, who has several vineyards, he de-

nied the existence of more than four *species* of grapes in Dukhun, and insisted that the others were mere varieties originating in peculiarities of soil and cultivation. He asserted that the Bedana was only the *imperfect* fruiting of the Sahibee ; but as he asserted at the same time that the round black Portugal Grapes in Sir Miguel De Souza's garden at Bombay, and in some gardens at Poona was only the imperfect fruiting of the Hubshee ; I did not place much confidence in his opinion. He said however, very truly, that the gardeners at Poona and elsewhere, to enhance the value of their grapes, take the advantage of any accidental changes in the ordinary fruiting, to give a new name to the grape offered for sale.

There are extant in the Sanscrit language ancient and celebrated works which combine the character of a Vocabulary, a Dispensatory, and artizan's Nomenclature ; these are called Neeguntoos. I possess a copy of the oldest and most valuable of these the Raj Neeguntoo, also of four others. My object in noticing them is to state that three species of grapes are mentioned in the Raj Neeguntoo. In the Keh Deva Neeguntoo only one species is mentioned, but numerous names are given to this one species. The Bhao Prukash Neeguntoo speaks of the wild grape, and calls it पर्वनजद्राक्षा Purwutjuh Draxsha or mountain grape. A belief obtains amongst some intelligent natives of Dukhun that the Vine exists in a wild state in the western Ghauts, but this is very problematical. The Sanscrit works previously noticed give the grape the following properties : " The juices are acid and sweet ; the unripe fruit is heating, bilious and carminative. When ripe, cool, anti-bilious, phlegmatic, slightly astringent, strengthening, diuretic, useful in diseases of the skin, in fever, asthma, heat in the stomach, and in removing the effects of inebriety."

The above notices of the Vine in ancient Sanscrit works bear ample testimony to the remote period at which it was known in India.

W. H Sykes.

XXVIII. *Upon the Culture of the Strawberry. By* Thomas Andrew Knight, *Esq. F. R. S. President.*

Read May 2, 1837.

So much has been written upon the culture of the Strawberry, and the industry of the market gardener has been so much stimulated by the high price of the fruit in the earlier part of its season, that its culture may be reasonably supposed to be scarcely capable of further improvement. The results of some experiments in which I have been engaged during the last three years have however led me to think, that I am prepared to point out some no very trivial improvements of management.

The gardener of the present time, in opposition to the practice of his predecessors, usually employs plants, which are afforded by the runners of the preceding year; and such practice is perfectly successful in warm situations, and after warm and favourable seasons; but it is important in such situations, and still more so in situations which are less favourable, to obtain plants as early as practicable in the season preceding that in which they are to produce fruit.

Every gardener knows that plants of Keen's Seedling Strawberry, which have been forced early and properly in the spring, will afford, if turned out of their pots into the soil, and properly watered, a second crop in the autumn. These plants have usually a good many runners attached to them, which readily emit abundant roots if placed in close contact with the soil and plentifully supplied with water; and the plants which may be obtained from these runners are greatly preferable to those which

cannot be obtained till a much later period. They occupy more perfectly the whole extent of the pots in which they are planted, and acquire a much greater degree of strength and maturity during the summer and autumn than plants of inferior age; and they consequently afford more abundant and more early crops, and fruit of larger size, than is produced by younger plants.

When I have possessed more of such plants, than I have wanted for forcing, I have, early in the summer, planted them closely in contact with the base of my south walls, under the branches of my peach and nectarine trees, where the soil usually remains unemployed; and I have by these means obtained a very early and a very abundant crop of fruit of first rate quality, which has ripened at least nine days earlier, than the fruit of the same varieties in other pots of my garden. The plants of KEEN's Seedling may with advantage, be placed at three inches distance from each other, and those of the Grove End, the only other varieties which I have subjected to experiment, at two only apart.

If such plants be suffered to remain a second year the fruit which they will afford will be of smaller size generally, and will not ripen nearly as early; and therefore as soon as the fruit has been gathered, and the runners, which under such circumstances are produced very early, having taken root, the old plants must be destroyed and the young, which the runners afford, made to occupy their places. The soil will, of course, require to be annually manured; and if the manure to be applied be previously incorporated with some fresh loam, the plants will be eventually benefitted. If the weather be dry after planting, water should be regularly and abundantly given, as it is very important that the plants become firmly established in the soil during the early part of the summer.

Cattleya Gutteta

XXIX. *Note upon Cattleya guttata.* *By* John Lindley, *Ph. D., F. R. S., &c., Assistant Secretary.*

Read April 18, 1837.

There is perhaps no genus of Orchidaceous Epiphytes yet in our gardens such a general favourite as Cattleya, a circumstance which is to be ascribed in part to the great beauty of such species as C. labiata, Loddigesii, and crispa, and doubtless also in part to the readiness with which they adapt themselves to the artificial state of life under which they are necessarily preserved in our hothouses.

There is, however, a great difference in the degree of success with which these plants are managed even by excellent cultivators; for if we see C. labiata and crispa with two or three flowers in a cluster, so also do we see them with a larger number; C. crispa, in particular, has been grown with seven flowers, by Mr. Paxton, gardener to His Grace the Duke of Devonshire: thus forming a spectacle of almost unrivalled beauty. The most striking instance of remarkable success in this matter that has come to my knowledge is in the case of a plant of C. guttata, flowered in the hothouse of Richard Harrison, Esq., of Aighburgh, near Liverpool, and by him exhibited at the meeting of this Society, on the 6th of December last, when the silver Knightian medal was awarded it.

C. guttata is a native of the woods about Rio Janeiro. It was originally sent to this Society by the Right Honourable Sir Robert Gordon, and has recently been met with by Mr. Gardner in abundance on trees and rocks in the same country.

It usually produces two or three yellowish green flowers, richly spotted with crimson, which is its condition in a wild state; occa-

sionally five or six are seen, and possibly more. The specimen to which I allude had no fewer than twenty-four flowers on one raceme, and was altogether, with the exception of an Aerides cornutum in the possession of Messrs. Loddiges, the most noble specimen of this natural order of plants that I have had the good fortune to observe. The Members of the Society will, therefore, be glad to learn by the following extracts from letters of Mr. W. Perrin, Mr. Harrison's gardener, what method was pursued to produce this really wonderful individual.

"The soil in which I grow Cattleyas is a compost of peat earth and broken potsherds in equal quantities. I always pot at the time the young shoots begin to grow; I do not use very large pots, but endeavour to proportion the pot to the size of the plant. In potting, I always keep the plant a little higher than the top of the pot, as these plants suffer from being disturbed in their roots too often. I do not pot them oftener than can possibly be avoided. The Cattleya guttata, the flower of which was sent to the Horticultural Society, has not been repotted for the last three years. I keep the plants in rather a low heat during the winter months, the thermometer generally ranging from 50° to 60°. As the spring approaches, I increase the heat, keeping the hothouse more moist. In the latter spring and summer months, the temperature is maintained between 70 and 100 degrees, and the moisture is increased as much as possible, with a little shade in very bright weather over the glass. When the plants have done flowering and the young shoots cease to grow, I begin to lessen the quantity of water, till the approach of winter, when it is entirely withheld for that season. As soon in the spring as they begin to make their young shoots, they are potted, if I judge they want it; if not, they are top-dressed, and I begin to water, as I left off, by degrees, till the summer, when I water very freely."

Mr. Perrin is equally successful in his propagation of Cattleyas, and gives the following account of his plan:—

"My first trial was on a large plant of Cattleya crispa, which had eight old shoots, and two young shoots, gone over the side of the pot. I took a sharp penknife, and cut the plant through carefully in three places, taking care not to disturb the plant, or to cut any of the roots. To my great surprise, in a short time I had two fine young shoots at the side of each old one where I had cut. I have now eight young shoots; and I believe, had I cut it through at the side of all the old shoots, I should have had 16 young shoots. I intend to cut the remainder of the shoots through next season. I should say in this place, that the two young shoots that were on the plant, before I cut it through, did not suffer by the wound. I think they grew equally as strong, and faster than before, which makes me think that the old part of the plant is of no use to the new shoots after they have made their roots. I have been informed, that this method of increasing Orchidaceous Epiphytes will not succeed, excepting on large established plants; but I have tried it on very small plants, and have found it answer as well as on larger ones."

The annexed figure from a drawing, by Miss Drake, will show, better than any description, the extraordinary appearance made by Mr. Harrison's Cattleya when it was exhibited.

XXX. *On the Preservation of the early Foliage of Peach and Nectarine Trees. By* Thomas Andrew Knight, *Esq., F. R. S., President.*

Read May 16, 1837.

I stated, in a communication to this Society, two or three years ago, that my gardener had, with the intention of destroying insects, washed one whole Nectarine tree, and the half of another, with water holding in suspension a small quantity of quick lime and of flowers of sulphur; and that the leaves of all my other trees of the same species had become blistered and useless, owing to the injurious effect of frost; whilst all the leaves of the one tree, and half of the other, which had been washed, totally escaped injury. I also stated, that in the following spring, I had applied the same wash to all my peach and nectarine trees, and that I had been unable to find a single blistered leaf; and my gardener has recently informed me, that he has been unable to find one in the present year. How this application can have operated in any way beneficially I am wholly at a loss to conceive; but the facts appear very strong, as, during the preceding twenty-five years, by far the larger part of the early foliage of all my peach and nectarine trees, and in several seasons the whole of it, had been rendered wholly inefficient by the injurious operation of frost.

One of my friends informed me, in the autumn of last year, that a very intelligent and successful gardener, Mr. Pearson, who has the management of the gardens of Mr. Child, of Kinlet, in Shropshire, had adopted the same mode of treatment, with the same results. I, in consequence, wrote to Mr. Pearson; and he, in answer, informed me, that in the season following that in which he

had first seen my trees at Downton, he had applied the wash to all his peach and nectarine trees, except two, and that those two only produced blistered leaves, and that he had subsequently washed all his trees, and that no blistered leaves had appeared since in his garden.

The blossoms of my peach and nectarine trees have set exceedingly well since my trees have been treated in the manner above mentioned; but whether this has been owing to any beneficial operation of the wash upon the blossoms, or to the more perfect maturity of the wood in consequence of the preservation of the early leaves of the preceding season, I am wholly at a loss to conjecture.

I applied the wash in the present season to my apricot trees; whether with any beneficial effects or not, I am, of course, unable to decide; but I have a very good crop of apricots, of which few persons can, I believe, boast in the present season: it is much better than I have had in much more apparently favourable seasons. I place, however, but little confidence in the wash relatively to its operation in this case, as I am wholly incapable of conjecturing by what possible means it can operate beneficially. I am, however, much too ignorant of the laws of vegetable life to decide that it did not operate beneficially; and as the wash banishes the red spider, the experiment appears to deserve repetition. I employed in covering my trees the same article, which I have used during many years. It consists of the slender twigs of the birch tree, which are attached to the wall, generally by being pushed in under the branches of the wall tree, and made to hang with their points downwards. These branches of the birch tree are about a yard long, and so placed that their points stand out about 18 inches from the wall; and the quantity I employ is about as great as to afford a cover equivalent to that given by a double ordinary net. The young shoots of an elm tree, which has been shreaded two years, will afford nearly as good a covering; and

such shoots may be taken off with benefit to the elm tree. I think the covering here recommended preferable to that of a net, as that is usually employed. The expence of it is very small, and the labour trifling; and I think that it is better calculated to intercept the heat, which radiates from the ground; and the effects of such radiating heat are, I believe, in particular states and degrees of the temperature of the night, of no inconsiderable importance. I have, in some cases, applied the wash to my trees before covering them, and in others after; and I think the last-named practice the best. In making the wash, I use equal parts of flowers of sulphur, of quick lime, and of soot.

XXXI. *A New Method of destroying Insects in Stoves and Green-Houses. In a Letter to the Secretary. By Mr.* James Ingram.

Read August 1, 1837.

Sir,

It is gratifying to me to be enabled to inform my brother horticulturists of an effective and cheap method to destroy the Red Spider, Scale, Thrips, and Green Fly, without injuring the most tender plant. Where there are but few plants infested with either kind of insect, take a one-light frame and place the plants infested, about four inches apart, and then procure from one to two gallons of green laurel leaves and well bruise them; immediately place them between the pots and close the frame with the least possible delay, taking care to keep the frame air-tight; at the expiration of one hour take out the plants infested with Red Spider and Green Fly, and it will be found that they cease to exist.

It will take from eight to twelve hours to destroy the Thrips and Scale; at the expiration of that time take out the plants, place them in a warm and exposed situation, and in a few days the insects will all dry up and fall off.

When plants are infested in Stoves or Greenhouses with either insect the process must be a little varied. A house 12 feet by 20 will require about two bushels of leaves; they can be bruised in the house, and placed in a tub or box, and covered with a sack or cloth until a sufficient quantity is bruised; then they are to be strewed in the paths, and between the pots and other vacant places, and the house must be kept as close as possible for at

least twelve hours; the evening will be found the best time, so that the house can remain closed and covered with double mats all night. I have found by repeated trials that the plan thus described answers better than any I have ever used or heard of.

JAMES INGRAM.

XXXII. *Upon the Economical Use of Melon Frames.* *By* Thomas Andrew Knight, *Esq. F. R. S. President.*

Read June 6, 1837.

It appears, at first view, a singular circumstance, that the gardens of England are least productive of good vegetables just at that season of the year when light is most abundant, and the weather, generally, most favourable to vegetation. In the month of June the season of asparagus expires, the potatoes of the past year are greatly deteriorated in quality, the flesh of the turnip, if that plant be grown, is hard and fibrous; and the taste of the cabbage becomes comparatively strong and unpalatable; whilst, neither pea nor bean, nor early potatoe, nor other vegetable of much value can be brought to table, unless in very favourable situations, or raised under glass, and with the aid of artificial heat. Under these circumstances, I have thought that an account of a method of cultivating the turnip, by which that vegetable may be obtained in a very high state of perfection in the month of May and June worth communicating; particularly as the mode of culture requires but little trouble and expense, and no new machinery.

I caused a hotbed to be made of oak leaves in the middle of February, and when it had become warm in the end of that month, it was covered with fresh loam, manured with the ashes of burned weeds, to the depth of eight inches. In this, turnips were planted, as soon as the young plants had just unfolded their seed leaves, and for some time treated nearly as tender annual plants are usually treated: but in repeating the experiment, I should sow the seeds in the hotbed.

Plants of any of the varieties of dwarfish early turnip may be placed with advantage in rows of fourteen inches distance, and with intervals of four inches only between the plants in the rows. I raised at the same time an equal number of plants, in small pots of four inches external diameter, and five inches deep, to be placed between the rows abovementioned, and to be planted out in the open ground in the first week of April. At that period, the frames and lights were removed, the plants having been gradually exposed to the open air and light, and another hotbed of similar form and size having been prepared, the frames and lights were put upon it. Potatoes were planted in it, which had previously been made to germinate. These remained under glass till the 20th of May, when they had acquired a large size; and they are now as mature as potatoes usually are, in favourable seasons, in the beginning of July. Upon the 20th of May, the frame was removed to another hotbed, in which I had intended to put melon plants of a month old; but owing to some seeds which I had sowed, not having germinated, I have been obliged to use younger plants; and my melons consequently, which would have ripened early in July, will probably not ripen till near the end of that month.

The turnips which remained permanently in the hotbed, became fit for use, in the middle of May, and have all been consumed, having proved very excellent, for any season: and those which were planted in the pots abovementioned, and removed to the open ground, are now fit for use. Some of these might probably have been placed with advantage under the shade of a north wall, but it did not occur to me to try the experiment. The mould in which all the plants abovementioned grew, and particularly that of the hotbed, was permanently kept very moist, with, I have reason to believe, very beneficial effects. A thin lining of hay, presenting the appearance of the commencement of a bird's nest was put into each of the pots, as is always done in my garden with all plants which are to be repotted or moved within a short time. Amongst

this substance the fibrous roots of the plants interweave themselves, and they can at any time be taken out of the pots without the least danger of their losing any part of their roots or mould.

In the management of my melon plants, I have during several past years adopted a mode of treatment which I have found very highly beneficial; and which I shall take this opportunity of describing and recommending. I use pots of about five inches wide and as many deep, but without any bottom. These are put to stand upon a piece of tile, or slate, and are lined with hay in the manner abovementioned, the plants being always put into them, as soon as the seed leaves have become unfolded. When the plants are transferred to the hotbed, the piece of tile or slate is taken away, and the pot is immersed to half its depth in the soil. Water is given to the mould in the pot, till the roots of the plant have extended themselves in the mould of the bed, but not afterwards; and the base of the stem in consequence not being ever wetted, never cankers, or becomes diseased.

Downton, June 6, 1837.

List of Persons to whom the LARGE GOLD MEDAL *has been presented from January* 1835, *to July* 31, 1837.

To THOMAS ANDREW KNIGHT, Esq. F.R.S., &c. President, for his numerous and valuable contributions to the Transactions of the Society, and for the signal services he has rendered to Horticulture by his physiological researches.

The Gold Banksian Medal placed at the disposal of the Society, by the late Right Honourable Lord Grey of Groby, for the cultivation and Exhibition of the newest and most ornamental Orchidaceous Plant, was obtained by Mr. James Bruce, Gardener to Boyd Miller, Esq. of Mitcham, for a Specimen of Oncidium ciliatum, with 44 flowers in its panicle, exhibited at the Society's Meeting in Regent Street, on the 4th of November, 1834.

In consequence of the death of Lord Grey of Groby, the award of this Medal has been discontinued.

List of Persons to whom the LARGE SILVER MEDAL *has been presented from January* 1835, *to July* 31, 1837.

To Mr. RICHARD CHANDLER, F. H. S. for the three best Chinese Camellias in pots, exhibited April 5, 1836.

To Mr. RICHARD CHANDLER, F. H. S. for the three best English Seedling Camellias in pots, exhibited April 5, 1836.

To Mr. STEPHEN HOOKER, F. H. S. for 48 varieties of Roses, exhibited June 21, 1836.

To Mr. THOMAS RIVERS, for a Collection of Roses, exhibited July 5, 1836.

To Mrs. EDWARDS VAUGHAN, for Providence and Queen Pine Apples, exhibited October 4, 1836.

To Mrs. LAWRENCE, F. H. S. for a plant of Poinsettia pulcherrima, exhibited December 6, 1836.

To Messrs. LODDIGES for Specimens of Dendrobium fimbriatum, D. Pierardi and D. pulchellum, exhibited March 7, 1837.

To JAMES BATEMAN, Esq. F. H. S. for a collection of Orchidaceous plants, exhibited June 6, 1837.

To Mrs. LAWRENCE, F. H. S. for Gesnera faucialis, &c. exhibited July 4, 1837.

List of Persons to whom the SILVER KNIGHTIAN MEDAL *has been presented from January*, 1835, *to July* 31, 1837.

To Mr. JOSEPH PAXTON, F. H. S., Gardener to the DUKE OF DEVONSHIRE, F. H. S., for fruit of the Musa Cavendishi, exhibited May 3, 1836.

To Mr. HENRY PRATT, Gardener to WILLIAM HARRISON, Esq. F. H. S. for flowers of the Oncidium altissimum, exhibited May 3, 1836.

To EDMUND JOHNSTON, Esq., F. H. S., for a plant of Hovea Celsi, exhibited May 3, 1836.

To Mrs. LAWRENCE, F. H. S., for Heaths and Kennedyas, exhibited May 17, 1836.

To Mr. A. MACKIE, Gardener to the MARQUESS of HERTFORD, for a Calceolaria viscosissima, exhibited June 7, 1836.

To Mrs. LAWRENCE, F. H. S., for Pimelea decussata, and other greenhouse plants, exhibited June 7, 1836.

To Mr. JOHN NICHOLSON, Gardener to the Hon. W. F. STRANGWAYS, F. H. S., for Specimens of Mesembryanthemum rubrocinctum, exhibited June 7, 1836.

To Mrs. LAWRENCE, F. H. S., for a Collection of Greenhouse Plants, exhibited June 21, 1836.

To Mr. JAMES FAIRBAIRN of Clapham, for Heaths, exhibited August 2, 1836.

To Mrs. LAWRENCE, F. H. S., for a Collection of Greenhouse Plants, exhibited August 16, 1836.

To Messrs. LODDIGES, for a plant of Peristeria elata, exhibited August 16, 1836.

To Mr. JOHN DAVIS, Gardener to LADY CLARKE, for Muscat of Alexandria Grapes, and a Queen Pine, exhibited September 6, 1836.

To Messrs. Colley and Hill, for Brown Figs, exhibited September 6, 1836.

To Mr. J. B. Whiting, Gardener to the Earl of Tyrconnel, F. H. S. for Cannon Hall Muscat Grapes, exhibited October 4, 1836.

To Sir Oswald Mosley, Bart. F. H. S., for Dove Bank Plums, exhibited October 4, 1836.

To Messrs. Rollisson, for a collection of Orchidaceous Plants, exhibited October 18, 1836.

To Mr. George Glenny, F. H. S., for Dahlias, exhibited October 18, 1836.

To Mr. John Green, Gardener to Sir Edmund Antrobus, Bart. F. H. S., for a Specimen of Columnea scandens, exhibited November 1, 1836.

To Messrs. Rollisson, for a plant of Oncidium crispum, exhibited November 1, 1836.

To Mr. John Spence, Gardener to R. Durant, Esq. F. H. S., for Pine Apples, exhibited November 1, 1836.

To Mr. James Falconer, Gardener to Archdale Palmer, Esq. for Specimens of Luculia gratissima, exhibited December 6, 1836.

To Mr. John Green, Gardener to Sir Edmund Antrobus, Bart. F. H. S., for Begonia insignis, &c. exhibited December 6, 1836.

To Mr. Hugh Low, F. H. S., for Euphorbia Jacquiniflora, exhibited December 6, 1836.

To Richard Harrison, Esq. F. H. S., for Cattleya guttata, exhibited December 6, 1836.

To Messrs. Chandlers, for Jersey Chrysanthemums, exhibited December 6, 1836.

To Mr. George Lyne, Gardener to H. Perkins, Esq., F. H. S. for Providence Pine Apples, exhibited December 6, 1836.

To Mr. John Henderson, for a double Primula Sinensis, exhibited January 17, 1837.

To Mrs. Lawrence, F. H. S., for Epacris impressa, &c. exhibited January 17, 1837.

To Stephen Francis Phelps, Esq. F. H. S., for Specimens of Renanthera coccinea, exhibited January 17, 1837.

To Mr. George Glenny, F. H. S., for species of Epacris, exhibited February 7, 1837.

To the Rev. George Cumming Rashleigh, for Specimens of Tropæolum brachyceras, exhibited February 21st, 1837.

To Mrs. Lawrence, F. H. S., for Ipomæa Horsfalliæ, exhibited March 7, 1837.

To Mr. Gaines, for Rhododendron Russellianum, exhibited March 7, 1837.

To Mr. H. Pratt, Gardener to W. Harrison, Esq. F. H. S., for a new species of Callistemon, exhibited March 7, 1837.

To Mr. George Glenny, F. H. S., for Andromeda floribunda, exhibited March 7, 1837.

To Mrs. Lawrence, F. H .S. for Dendrobium aggregatum, exhibited March 21, 1837.

To Mr. Pressly, Gardener to Walter Boyd, Esq. F. H. S. for Euphorbia Jacquiniflora, exhibited March 21, 1837.

To Mr. John Green, Gardener to Sir Edmund Antrobus, Bart. F. H. S. for Euphorbia splendens, exhibited April 4, 1837.

To the Rev. John Luscombe, for Oranges, &c. exhibited April 4, 1837.

To Messrs. Whitley and Osborn, for Rhododendron arboreum, exhibited April 18, 1837.

To Mr. George Glenny, F. H. S., for Acacia verticillata, exhibited April 18, 1837.

To Messrs. Rollisson, for a new variety of Oncidium Carthaginense, exhibited April 18, 1837.

To Messrs. Chandler, for Azalea Indica pulchra, exhibited April 18, 1837.

To Messrs. Low, for Camellia Sieboldi, exhibited April 18, 1837.

To Mrs. Lawrence, F. H. S., for a Collection of Greenhouse Plants, exhibited May 2, 1837.

To Mr. John Green, Gardener to Sir E. Antrobus, Bart. F. H. S., for Cinerarias, exhibited May 2, 1837.

To Mr. George Glenny, F. H. S., for Eriostemon buxifolium, exhibited May 2, 1837.

To Mr. Charles Young, for a new species of Cattleya, exhibited May 2, 1837.

To James Bateman, Esq. F. H. S., for Oncidium pulchellum, and Dendrobium calceolus, exhibited May 16, 1837.

To Mrs. Lawrence, F. H. S., for Eriostemon cuspidatum, exhibited June 6, 1837.

To Mr. James Fairbairn, for Heaths, exhibited July 4, 1837.

To James Bateman, Esq., F. H. S., for Orchidaceæ, exhibited July 4, 1837.

To Mr. Stephen Hooker, F. H. S., for Roses, exhibited July 4. 1837.

To Mr. Robert Errington, Gardener to Sir P. Egerton, Bart. F. H. S. for Peaches, exhibited July 4, 1837.

To Mr. John Stewart, Gardener to Lord Ashburton, F. H. S., for Peaches and Strawberries, exhibited July 4, 1837.

To Mr. Robert Errington, Gardener to Sir P. Egerton, Bart. F. H. S., for Nectarines, exhibited July 18, 1837.

List of persons to whom the SILVER BANKSIAN MEDAL *has been presented from January* 1835, *to July* 31, 1837.

To JAMES BATEMAN, Esq. F. H. S. for Specimens of Averrhoa carambola, exhibited January 20, 1835.

To Mr. GEORGE PHILLIPS, Gardener to the Misses TREVOR for specimens of the Bignonia venusta, exhibited December 1, 1835.

To Mr. RICHARD CHANDLER, F. H. S. for the best basket of flowers of English seedling Camellias, exhibited April 5, 1836.

To WILLIAM WELLS, Esq. F. H. S. for the best basket of flowers of Chinese Camellias, exhibited April 5, 1836.

To Mr. JAMES YOUNG, F. H. S. for specimens of Ardisia hymenandra, exhibited April 5, 1836.

To Mr. GEORGE GLENNY, F. H. S. for a specimen of Euphorbia splendens, exhibited April 5, 1836.

To Mr. JAMES LANE, Gardener to JOHN HORSLEY PALMER, Esq. F. H. S. for a specimen of Tropæolum tricolor, exhibited April 5, 1836.

To Mr. WILLIAM DENNIS, for a plant of Dennis' Perfection Geranium, exhibited May 3, 1836.

To Mr WILLIAM REDDING, Gardener to Mrs. MARRYAT, F. H. S. for specimens of Helonias bullata, exhibited May 3, 1836.

To Mr. GEORGE GLENNY, F. H. S. for a plant of Arbutus procera, exhibited May 3, 1836.

To Mrs. LAWRENCE, F. H. S. for a specimen of Arbutus procera, exhibited May 17, 1836.

To Messrs. CHANDLER, for a plant of Trillium grandiflorum, exhibited May 17, 1836.

To Mr. Philip Conway, Gardener to Lawrence Sullivan, Esq. F. H. S. for Cauliflowers, exhibited June 7. 1836.

To Mr. John Salter, for Spanish Irises, exhibited June 21, 1836.

To Mr. Robert Buck, F. H. S. for Grapes, exhibited June 21, 1836.

To Mr. George Glenny, for a specimen of Echites suberecta, exhibited June 21, 1836.

To Mr. William Redding, Gardener to Mrs. Marryat, F. H. S. for Arbutus pilosa, exhibited June 21, 1836.

To Mr. Stephen Hooker, F. H. S. for a Collection of Roses, exhibited July 5, 1836.

To Mr. Thomas Hogg, for a collection of Pinks, &c. exhibited July 5, 1836.

To Mr. John Salter, for English Irises, exhibited July 5, 1836.

To Mr. James Young, F. H. S. for Pentstemon latifolius, exhibited July 5, 1836.

To Mr. Thomas Hogg, for Piccotees, exhibited July 19, 1836.

To Mr. James Lane, Gardener to John Horsley Palmer, Esq. F. H. S. for Manettia cordifolia and Gloxinia speciosa alba, exhibited July 9, 1836.

To Mr James Young, F. H. S. for Alströmeria Neillii, exhibited July 19, 1836.

To Mr. Stephen Hooker, F. H. S. for Roses, exhibited August 2, 1836.

To Mr. William Redding, Gardener to Mrs. Marryat, F. H. S. for Campanula fragilis, and C. garganica, exhibited August, 2, 1836.

To Mr. John Salter, for Dahlias, exhibited August 16, 1836.

To Messrs. Chandler, for Dahlias, exhibited August 16, 1836.

To the Rev. William Cobbold, for Russet Nonpareils, the growth of the year 1835, exhibited September 6, 1836.

To Mr. William Redding, Gardener to Mrs. Marryat, F. H. S. for Gusmannia bicolor, exhibited September 20, 1836.

To Mr. Hugh Low, F. H. S. for Clematis cærulea grandiflora, exhibited October 4, 1836.

To Mrs. Lawrence, F. H. S. for Zygopetalum Mackaii, exhibited October 4, 1836.

To Messrs. Chandler, for a seedling Chrysanthemum, exhibited October 18, 1836.

To Mr. William Buchan, F. H. S. for his cultivation and exhibition of specimens of the Cinnamon, February 7, 1837.

To Mrs. Lawrence, F. H. S. for Brassia Lanceana, exhibited April 4, 1837.

To Mr. J. W. Thompson, for Tropæolum brachyceras, exhibited April 4, 1837.

To William Harrison, Esq. F. H. S. for Arctostaphylos myrtifolia, exhibited April 4, 1837.

To R. W. Eyles, Esq. F. H. S. for Kennedya longiracemosa, exhibited April 4, 1837.

To Mr. George Glenny, F. H. S. for Euphorbia splendens; *var.* Byronia, exhibited April 4, 1837.

To J. G. Fuller, Esq. F. H. S. for Golden Harvey Apples, exhibited April 4, 1837.

To Mr. Alexander Forbes, Gardener to H. S. Pownall, Esq. F. H. S. for Golden Harvey Apples, exhibited April 18, 1837.

To Mr. Patrick Flanagan, F. H. S. Gardener to Sir Thomas Hare, Bart. for Cucumbers, exhibited April 18, 1837.

To Mr. Henry Groom, F. H. S. for Auriculas, exhibited May 2, 1837.

To Mr. Pressly, Gardener to Walter Boyd, Esq. F. H. S. for Camellia Pressleyi, exhibited May 2, 1837.

To Mr. George Collier, Gardener to Mr. J. A. Henderson, for Cinerarias, exhibited May, 16, 1837.

To Mr. William Redding, Gardener to Mrs. Marryat, F. H. S. for Cinerarias, exhibited May 16, 1837.

To Mr. George Glenny, F. H. S. for a species of Kennedya, exhibited June 6, 1837.

To Mr. Henry Fenton, Gardener to Joseph Berens, Esq. for Kennedya inophylla, exhibited June 6, 1837.

To William Leveson Gower, Esq. F. H. S. for Double Yellow Roses, exhibited July 4, 1837.

To Mr. Patrick Flanagan, F. H. S. Gardener to Sir Thomas Hare, Bart. for Grapes, exhibited July 18, 1837.

To Mr. Durnsford, Gardener to the Hon. Baron Dimsdale, F. H. S. for Catasetum luridum, exhibited July 18, 1837.

TRANSACTIONS

OF THE

HORTICULTURAL SOCIETY

OF

LONDON.

SECOND SERIES.

LONDON:

PRINTED FOR THE SOCIETY BY W. STRAKAN & CO. WHITEFRIARS;

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ADVERTISEMENT.

THE Committee appointed by the Horticultural Society to direct the publication of the Papers read before them, take this opportunity to inform the Public, that the grounds of their choice are, and will continue to be, the importance and singularity of the subjects, or the advantageous manner of treating them, without pretending to answer for the certainty of the facts, or the propriety of the reasonings, contained in the several Papers so published; which must still rest on the credit or judgment of their respective Authors.

It is likewise necessary, on this occasion, to remark, that it is an established rule of this Society, to which they will always adhere, never to give their opinion, as a body, upon any subject, either of Nature or Art, that comes before them. And, therefore, the thanks which are proposed from the Chair, to be given to the Authors of such Papers as are read at the General Meetings, or to the Persons who send fruits, or other vegetable productions, or exhibit Inventions of various kinds to the Society, are to be considered in no other light than as a matter of civility, in return for the respect shewn to the Society by these communications.

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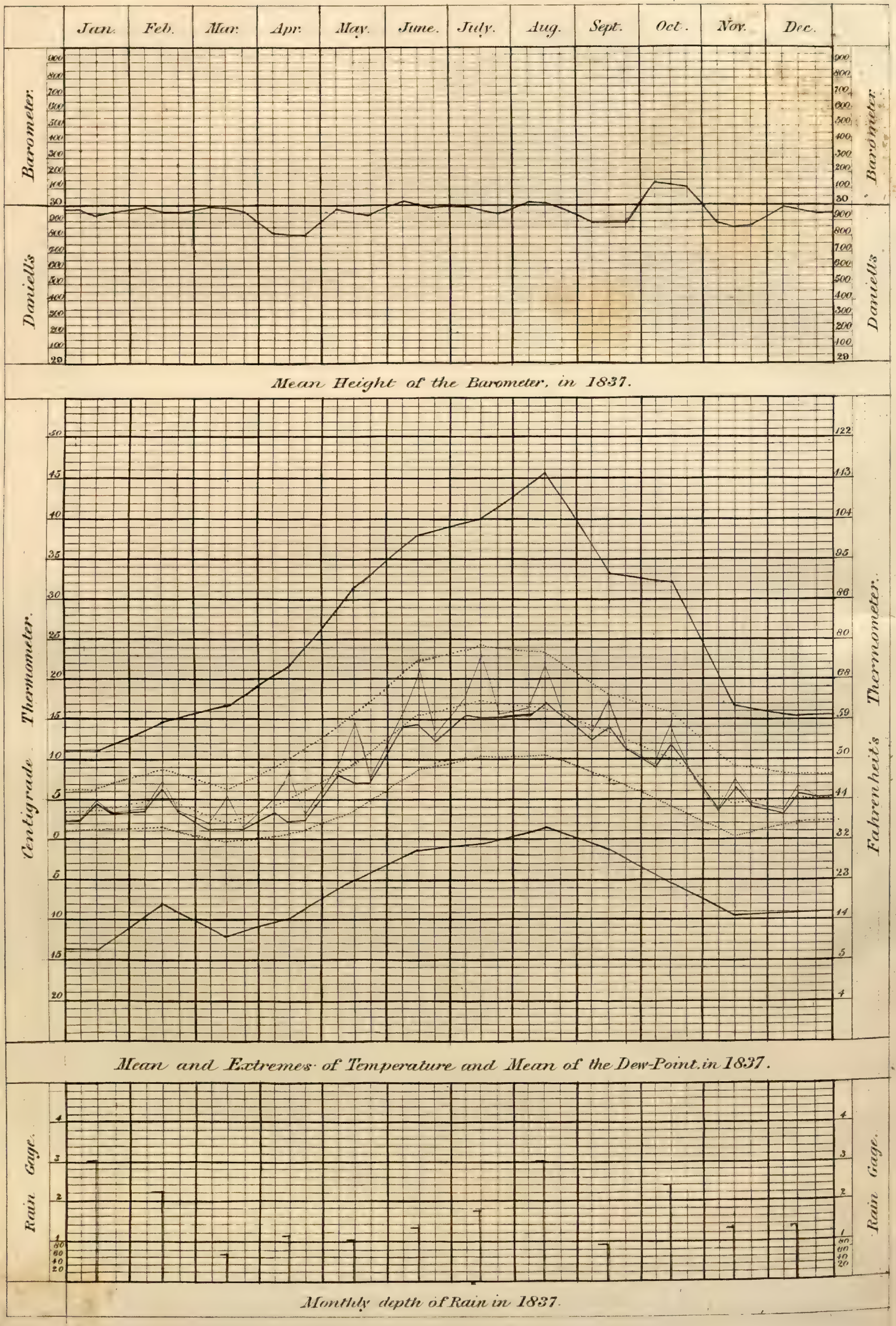
Jan.
Feb.
Mar.
Apr.
May.
June.
July.
Aug.
Sept.
Oct.
Nov.
Dec.
Barometer.
Daniells
900
800
700
600
500
400
300
200
100
30
29
Mean Height of the Barometer, in 1837.
Centigrade Thermometer.
Fahrenheit's Thermometer.
50
45
40
35
30
25
20
15
10
5
0
122
113
104
95
86
80
68
59
50
41
32
23
14
5
4
Mean and Extremes of Temperature and Mean of the Dew-Point, in 1837.
Rain Gage.
4
3
2
1
80
60
40
20
Monthly depth of Rain in 1837.

XXXIII. *Journal of Meteorological Observations made in the Garden of the Horticultural Society at Chiswick during the year* 1837. *By Mr.* Robert Thompson.

This Journal has been kept on the same plan as the preceding one.

JANUARY.

		Morning.					Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	30.585	—2.5	—2.5	—	Clear	30.555	0	0	—	Slight Snow	30.506	—2.5	—2.5	—	Clear
M.	2	30.461	—8.5	—8.5	—	Frosty&Foggy	—.444	—1	—1	—	Frosty&Foggy	—.500	0.5	0.5	—	Cloudy&Fine
T.	3	30.373	1	1	—	Slight Thaw	—.338	4	4	—	Hazy	—.323	0.5	0.5	—	Clear & Calm
W.	4	—.399	0	0	—	Foggy	—.394	4	4	—	Overcast	—.325	2	2	—	Overcast
Th.	5	—.204	1	1	—	Hazy	—.061	3.5	3.5	—	Ditto	29.919	1	1	—	Ditto
● F.	6	29.685	6	6	—	Rain	29.629	8.5	8.5	—	Fine	—.621	7	7	—	Cloudy & windy
S.	7	—.658	3.5	3.5	—	Clear	—.758	6	6	—	Ditto & C ear	—.942	2.5	2.5	—	Ditto
S.	8	30.271	—1	—1	—	Ditto & Frosty	30.242	3	3	—	Ditto	30.370	3	3	—	Overcast
M.	9	—.247	6	6	—	Overcast	—.215	9.5	9.5	—	Overcast	—.153	7	7	—	Ditto
T.	10	29.823	8	8	—	Do. Boisterous	29.726	10	10	—	Cloudy	—.004	2.5	2.5	—	Ditto
W.	11	30.169	—4	—4	—	Clear & Frosty	30.166	0	—4	4	Clear & Frosty	—.206	—1.5	—1.5	—	Ditto
Th.	12	—.147	—1	—1	—	Overcast	—.008	2.5	2.5	—	Overcast	29.655	4	4	—	Stormy&Cloudy
☽ F.	13	29.493	9	9	—	Rain	29.378	10	10	—	Rain	—.659	2.5	2.5	—	Clear
S.	14	—.983	1.5	1	0.5	Clear	30.096	4	1	3	Fine but Cold	30.383	1	1	—	Fine
S.	15	30.436	0	0	—	Ditto	—.404	3	3	—	Fine	—.508	0.5	0.5	—	Cloudy & Do.
M.	16	—.479	0.5	0.5	—	Overcast	—.344	2	2	—	Hazy	—.333	2	2	—	Hazy
T.	17	—.323	2.5	2 5	—	Foggy	—.296	5	5	—	Foggy	—.247	4	4	—	Ditto
W.	18	—.191	3	3	—	Ditto	—.126	4	4	—	Ditto	—.017	2	2	—	Ditto
Th.	19	29.974	1	1	—	Ditto	29.896	3	3	—	Ditto	29.878	2	2	—	Ditto
F.	20	—.767	0.5	0.5	—	Rain	—.734	1	1	—	Densely Ditto	—.732	0.5	0.5	—	Ditto
○ S.	21	—.687	2.5	2.5	—	Overcast	—.636	5.5	5.5	—	Cloudy	—.566	5	5	—	Cloudy
S.	22	—.358	6	6	—	Rain	—.344	11	11	—	Ditto	—.350	9	9	—	Rain
M.	23	—.444	9	9	—	Ditto	—.400	10	10	—	Rain	—.382	9.5	9.5	—	Cloudy & Fine
T.	24	—.556	7.5	7.5	—	Fine	—.611	11	11	—	Fine	—.626	7	7	—	Ditto
W.	25	—.568	6	6	—	Cloudy	—.614	7.5	7	0.5	Overcast & do.	—.631	6	6	—	Rain
Th.	26	—.613	5.5	5.5	—	Heavy Rain	—.508	5	5	—	Heavy Rain	—.735	4	4	—	Stormy
F.	27	—.796	3	3	—	Overcast	—.803	3.5	3.5	—	Bleak and Cold	—.853	2.5	2.5	—	Ditto
S.	28	—.886	1	1	—	Sleet	—.905	2	2	—	Ditto	—.873	0.5	0.5	—	Fine
☾ S.	29	—.833	0	0	—	Snow	—.786	0.5	0.5	—	Snowing	—.780	1	1	—	Ditto
M.	30	—.831	1.5	1.5	—	Slightly Over	—.793	5	5	—	Overcast	—.798	5.5	5.5	—	Drizzly
T.	31	—.936	5	5	—	Overcast	—.877	9	9	—	Fine	—.974	4	4	—	Clear
Cent.		29.973	2.40	2.38	0.01		29.935	4.90	4.66	0.24		29.961	3.05	3.05	0.0	
Fah.			36.32	36.28	0.03			40.82	40.38	0.44			37.49	37.49	0.0	

JANUARY.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	1.5	—11	1.5	—13.7	N	Little		The year commenced clear and frosty; and the first night was the coldest of any during the season, the thermometer indicating fully 19° Fahr. below freezing. The mean temperature of the month was, however, 2° above the average. The remainder of the heavy snow-storm of the preceding month was generally gone by the 5th of this, in the neighbourhood of London, excepting where it had been drifted to great depth. The amount of rain was twice the usual quantity. On the night of the 25th it rained incessantly, falling to the depth of nearly an inch. The 26th was also stormy and wet. After this, the weather, which had been previously mild, became much colder, with sleet and snow on the 29th and 30th.
2	2	—5.2	2	— 7.5	W	Ditto		
3	4	—2	4	— 5.5	NW	Ditto	.30	
4	4	0.5	4	0	SW	Ditto		
5	7	0.5	7	— 2	S	Ditto	.03	
6	9.5	2.7	10	0	SW	Brisk	.11	
7	7.3	—2	8	— 6	W	Ditto		
8	7.7	0	8	— 5	SW	Little		
9	9.7	6.5	10	6	——	Brisk	.05	
10	10	4.5	10	— 8.5	——	Ditto		
11	1.7	—4	4	— 7	N	Little		
12	9	0.5	9	0	S	Brisk	.14	
13	10.2	1.5	10.5	— 1.7	W	Ditto	.12	
14	4.5	—0.5	4.5	— 4	N	Ditto		
15	4	—1	5	— 4	——	Little		
16	4	0.7	4	0.5	SW	Ditto	.06	
17	5.3	2.7	5.5	2.5	S	Ditto		
18	4	0.5	4	0	W	Ditto	.01	
19	3.2	0.4	4	0	E	Ditto	.06	
20	2	0	3	— 1	W	Ditto		
21	8.5	3.5	8.5	3	S	Ditto	.10	
22	11	8	11	7	SW	Ditto	.14	
23	10.5	7.8	11	6	——	Brisk	.05	
24	10.	5.5	10	5.5	S	Little	.51	
25	8	5	9.5	5	——	Ditto	.90	
26	6	2.5	6	1.5	E	Brisk	.18	
27	4	1	4.5	0.5	——	Ditto	.01	
28	2	0	2	— 0.5	NE	Ditto	.02	
29	3.5	—1.5	3.5	— 4	——	Little	.20	
30	7	3	7.5	2	SE	Ditto	.01	
31	9.5	2.4	10	— 0.5	S	Ditto	.03	
Cent	6.27	1.05	6.50	1.24			3.03	
Fah.	43.28	33.89	43.70	34.23				

Mean Pressure from the 3 daily observations 29.956 inches Fahr.

—— Temperature ..... Ditto	3°.45	or	38.21
—— Dew Point ..... Ditto	3°.36	—	38.04
—— Degree of Dryness ... Ditto	0.09	—	0.17
—— Degree of Moisture .. Ditto	.995		
—— Force of Vapour .... Ditto	.264 inch.		
Least observed degree of Moisture	.842		
Maximum Temperature in the Shade	10°.50	or	50.90
Minimum Temperature in ditto	—11°.00	—	12.20
Maximum Temperature in the Sun	11°.00	—	51.80
Minimum of Terrestrial Radiation	—13°.70	—	7.34
Mean Temperature of external Air	3°.66	—	38.58

WINDS.

North.....4 days.	N. East.....2 days.
South.....7 ..	S. East.....1 ..
East.....3 ..	N. West.....1 ..
West.....5 ..	S. West.....8 ..

31 days.

Amount of Rain..... 3.03 inches.

FEBRUARY.

		Morning.					Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	30.033	4	4	—	Hazy & damp	30.084	6.5	6.5	—	Foggy	30.206	5	5	—	Slight Frost
Th.	2	—.299	4.5	4.5	—	Ditto	—.319	8	8	—	Fine	—.311	3.5	3.5	—	Fine
F.	3	—.349	4.5	4.5	—	Foggy	—.361	8.5	8.5	—	Hazy	—.373	4	4	—	Ditto
S.	4	—.399	0	0	—	Frosty	—.393	4	4	—	Fine	—.391	1.5	1.5	—	Cloudy & Do.
S.	5	—.377	2	2	—	Overcast	—.368	3	1	2	Cloudy & do.	—.363	—1.5	—1.5	—	Clear & Ditto
M.	6	—.409	—2	—2	—	Sharp Frost	—.487	3.5	3.5	—	Very Fine	—.345	—1.5	—1.5	—	Ditto
T.	7	—.343	—1	—1	—	Frosty	—.312	5	3	2	Fine	—.298	1.5	1.5	—	Overcast
W.	8	—.205	1	1	—	Overcast	—.192	7	7	—	Overcast	—.195	5.5	5.5	—	Rain
Th.	9	—.295	7	7	—	Fine	—.296	8.5	8.5	—	Cloudy&damp	—.197	7.5	7.5	—	Fine
F.	10	29.963	7	7	—	Ditto	29.864	9.5	9.5	—	Rain	29.730	10	10	—	Stormy
S.	11	—.404	9	9	—	Stormy, Rain	—.214	8.5	8.5	—	Boisterous do.	—.261	4	4	—	Clear, Lightning
☽ S.	12	—.505	4.5	3	0.5	Clear	—.515	7.5	3.5	4	Cloudy & Fine	—.203	6	6	—	Rain
M.	13	—.311	8	8	—	Fine	—.276	9	9	—	Rain	—.279	6.5	6.5	—	Fine
T.	14	—.384	3	3	—	Ditto	—.465	9	9	—	Very Fine	—.750	0	0	—	Clear
W.	15	30.049	—1	—1	—	Frosty&Foggy	30.081	9	9	—	Ditto	30.086	7.5	7.5	—	Fine
Th.	16	—.141	9.5	9.5	—	Fine	—.159	13	13	—	Overcast & do.	—.101	10	10	—	Ditto
F.	17	—.275	5.5	5.5	—	Ditto	—.335	11	8	3	Very Fine	—.313	1.5	1.5	—	Ditto
S.	18	—.055	7	7	—	Slight Rain	29.903	11	11	—	Cloudy	29.665	5.5	5.5	—	Stormy
S.	19	29.762	4	4	—	Overcast	—.530	7	7	—	Rain, Stormy	—.162	10	10	—	Rain
☉ M	20	—.495	4	4	—	Very clear	—.695	9	2	7	Fine	—.726	6	6	—	Cloudy
T.	21	—.550	8	8	—	Stormy Rain	—.584	11	6	5	Ditto	—.713	5	5	—	Stormy
W.	22	—.892	4	4	—	Very clear	—.936	8.5	2	6.5	Ditto	30.005	3	3	—	Ditto
Th.	23	—.722	6	6	—	Rain	—.323	10	10	—	Stormy, Rain	29.445	3	3	—	Ditto
F.	24	—.763	3.5	3.5	—	Clear & Cold	—.882	6	—2	8	Clear and Cold	30.019	1	1	—	Ditto
S.	25	30.134	0	—0.5	0.5	Do. & Frosty	30.187	5	0	5	Bleak & Cold	—.219	0.5	0.5	—	Clear
S.	26	—.260	—0 5	—2	1.5	Ditto	—.210	5	—4	9	Ditto	—.201	0.5	0.5	—	Slightly Overcast
M.	27	—.048	1.5	1.5	—	Overcast	29.987	6	6	—	Overcast	29.980	2	2	—	Cloudy
☾ T.	28	—.096	2.5	2.5	—	Ditto	30.134	5	3	2	Ditto	30.288	—1	—1	—	Clear and Cold
Cent.		29.982	3.76	3.67	0.09		29.967	7.64	5.73	1.91		29.958	3.51	3.51	0.0	
Fah.			38.76	38.60	0.16			45.75	42.31	3.44			38.31	38.31	0.0	

FEBRUARY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	8	4·5	8·5	3	E	Little		The temperature of this month was exactly the same as the average temperature of the corresponding month, for 10 preceding years. The amount of rain was considerably above the average. The wind was from the South or South-west, during more than half the days. The 11th was boisterous, with rain. The 18th was stormy, and about half past ten in the evening, a reddish luminous arch was observed extending through the zenith, in a direction towards NE by E.
2	8.5	3·5	8·5	0	SE	Ditto		
3	8.7	—2.3	10	— 5	——	Ditto		
4	5	0.8	5.8	— 0.5	S	Ditto		
5	4	—3	4·5	— 7·5	SE	Ditto		
6	6	—2.7	8.5	— 8	S	Ditto		
7	8	3·7	9	— 8	——	Ditto		
8	8	5	8.5	4	——	Brisk	.09	
9	9·5	6.5	9·5	4·5	SW	Little		Mean Pressure from the 3 daily observations 29.969 inches. Fahr.
10	11	7·5	11	7·5	S	Brisk	.20	—— Temperature ..... Ditto ..... 4°.97 or 40.94
11	10	3	10.7	0	——	Strong	.34	—— Dew Point ..... Ditto ..... 4°.30 — 39.74
12	9·5	4	10	3	SW	Brisk	.16	—— Degree of Dryness .... Ditto ..... 0°.67 — 1.20
13	10.5	0.5	11	— 1	——	Strong	.08	—— Degree of Moisture .. Ditto ..... .955
14	11	3	12	— 6.5	W	Little	.02	—— Force of Vapour .... Ditto ..... .277 inch.
15	11	2.5	12	1	SW	Ditto		Least observed degree of Moisture ..... .578
16	13	4·5	14	1	——	Ditto		Maximum Temperature in the Shade .... 13°.00 or 55.40
17	12.5	—0.5	14.5	— 3	W	Ditto	.02	Minimum Temperature in ditto ..... —3°.00 — 26.60
18	10.5	0	11	— 3	SW	Brisk	.19	Maximum Temperature in the Sun ..... 14°.50 — 58.10
19	10	3·7	10	1.5	S	Ditto	.64	Minimum of Terrestrial Radiation .....—8°.00 — 17.60
20	9·5	5·5	11	3	W	Ditto	.06	Mean Temperature of External Air ..... 5°.11 — 41.20
21	12	2.7	12	0.5	SW	Brisk	.09	
22	10	3	10.5	0	W	Ditto	.04	
23	10.5	0.5	10.5	— 1	SW	Strong	.08	
24	7	0	8.5	— 3·5	NW	Ditto		
25	6	—2	8	— 7	N	Brisk		
26	5	—1	7·5	— 3	——	Ditto		
27	5	0	5	— 0.5	S	Little		
28	6	—1.5	7·5	— 4	NE	Ditto		
Cent	8.76	1.47	9.69	—1.16			2.01	
Fah.	47·76	34.64	49·44	29·92				

WINDS.

North.....	2 days	N. East.....	1 days
South.....	8 ..	S. East.....	3 ..
East.....	1 ..	N. West.....	1 ..
West	4 ..	S. West.....	8 ..

28 days.

Amount of Rain ..... 2.01 inches.

MARCH.

	1837.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	W.	1	30.421	0	—1	1	Bleak & Cold	30.431	3	—1	4	Bleak & Cold	30.431	1	1	—	Cloudy & cold
	Th.	2	—.394	1	—2	3	Ditto	—.330	5	0	5	Ditto	—.237	3.5	3.5	—	Ditto
	F.	3	—.340	1	0	1	Ditto	—.328	6	1.5	4.5	Ditto	—.227	4	4	—	Ditto&Stormy
	S.	4	—.106	5	5	—	Ditto	—.122	7	4.5	2.5	Ditto	—.134	2.5	2.5	—	Clear & Cold
	S.	5	—.122	2.5	1.5	1	Fine but Cold	—.048	7.5	2	5.5	Ditto	29.894	4	4	—	Cloudy
●	M.	6	29.990	5	3	2	Ditto	—.012	6.5	2	4.5	Cloudy	30.028	2.5	2.5	—	Ditto
	T.	7	30.102	4.5	2	2.5	Ditto	—.123	7.5	2	5.5	Fine but Cold	—.161	—0.5	—0.5	—	Frosty
	W.	8	—.245	1	1	—	Clear	—.233	8	1	7	Fine	—.157	4	4	—	Fine
	Th.	9	—.124	5	5	—	Overcast	—.079	8.5	8.5	—	Cloudy	29.917	4	4	—	Ditto
	F.	10	29.685	6.5	4	2.5	Cloudy	29.510	9	5	4	Do. & Fine	—.323	4.5	4.5	—	C oudy
	S.	11	—.319	4	4	—	Fine	—.309	8	1	7	Very Fine	—.301	0	0	—	Clear
	S.	12	—.379	0	0	—	Clear & Frosty	—.427	6	6	—	Sleet	—.581	2	2	—	Fine
	M.	13	—.877	2	2	—	Overcast	—.962	7.5	5	2.5	Cloudy & cold	30.253	3	3	—	Cloudy
☽	T.	14	30.378	2	2	—	Very Clear	30.364	7.5	1.5	6	Fine but cool	—.306	2.5	2 5	—	Stormy
	W.	15	—.223	2.5	2	0.5	Overcast & cold	—.134	5.5	3	2.5	Bleak & Cold	—.114	2.5	2.5	—	Ditto
	Th.	16	—.104	3	3	0	Drizzly	—.128	4	4	—	Hazy	—.205	3	3	—	Overcast
	F.	17	—.304	3	1.5	1.5	Overcast & cold	—.346	3.5	3.5	—	Overcast	—.326	2.5	2.5	—	Ditto
	S.	18	—.275	2.5	1	1.5	Ditto	—.235	5	2	3	Ditto	—.142	1	0 5	0.5	Cloudy & Cold
	S.	19	—.081	3	—1	4	Clear	—.099	5	0.5	4.5	Ditto	29.987	1.5	0.5	1	Ditto
	M.	20	29.954	1	0.5	1.5	Ditto	29.906	0.5	0.5	—	Snow showers	—.977	—2	—2	—	Ditto
	T.	21	—.930	—2	—2	—	Sharp Frost	—.870	1.5	1.5	—	Snowing	—.707	—1.5	—1.5	—	Ditto
○	W	22	—.812	—0.5	—0.5	—	Overcast	—.839	4	4	—	Cloudy	—.776	—2	—2	—	Ditto
	Th.	23	—.764	—1	—1	—	Ditto	—.743	5	5	—	Ditto	—.730	—3	—3	—	Sharp Frost
	F.	24	—.784	—3	—3	—	Frosty	—.793	3	—4	7	Clear	—.844	—2	—4	2	Clear & Cold
	S.	25	—.849	—0.5	—4.5	4	Frosty & Dry	—.821	5	—3	8	Cold & dry	—.781	1.5	0.5	1	Fine
	S.	26	—.780	4	4	—	Fine	—.756	6.5	—2	8.5	Slightly clouded	—.869	—2	—2	—	Clear & Cold
	M.	27	30.033	—1	—2	1	Frosty	30.077	5	—10	15	Cold & Dry	30.040	2	0	2	Ditto
	T.	28	—.013	4.5	4.5	—	Overcast	29.939	5	—6	11	Cloudy & do.	29.868	4	3	1	Cloudy & Windy
☾	W.	29	29.755	5.5	5.5	—	Fine	—.716	9.5	5	4.5	Cloudy & Fine	—.728	4	4	—	Slight Rain
	Th.	30	—.796	3.5	3.5	—	Ditto	—.785	8	—3	11	Fine	—.839	0.5	0.5	—	Clear & Cold
	F.	31	—.936	1.5	1.5	—	Clear	—.952	6	—5	11	Ditto	—.954	— 1	—1	—	Frosty
	Cent.		29.996	2.11	1.24	0.87		29.981	5.77	1.13	4.64		29.960	1.48	1.24	0.24	
	Fah.			35.79	34.23	1.56			42.38	34.03	8.38			34 66	34.23	0.43	

MARCH.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Force.	Direction.	In.	Pts.	
1	3·5	—0.5	3·5	—3	Little	NE			The general character of this month was bleak, cold, and dry. The mean temperature was 5°. below the average. The nights were generally frosty, and that of the 23d was the most severe, the thermometer indicating 12°. Fahr. below freezing. The North and North-East winds were prevalent. Vegetation made very little progress.
2	5·5	—1	8	—4	Brisk	N			
3	6	2.5	9	0.5	Ditto	——			
4	7·5	0.	9·5	—2.5	Ditto	——			
5	8.3	3	10	2	Ditto	NW			
6	5·5	1·5	7·5	0	Little	NE			
7	8.5	—2	13	—7	Ditto	——			
8	9·7	2.7	12.7	0	Ditto	NW			
9	9·5	3·5	11	1	Brisk	SW			
10	10	0.5	13	—2	Ditto	——		.09	Mean Pressure from the 3 daily observations 29.979 inches. Fahr.
11	10	6.7	16.5	—7	Little	——			—— Temperature ..... Ditto ..... 3°.12 or 37.61
12	8.5	1	15.5	—2	Ditto	——		.09	—— Dew Point ..... Ditto ..... 1°.20 — 34.16
13	7·5	0	13	—3	Brisk	NE			—— Degree of Dryness ... Ditto ..... 1°.92 — 3.45
14	7	1.5	12	0.5	Ditto	——			—— Degree of Moisture .. Ditto ..... .896
15	5	2	7.5	2	Ditto	——		.01	—— Force of Vapour ..... Ditto ..... .233 inch.
16	4·5	2	5·5	1.5	Little	——		.01	Least observed degree of Moisture ..... .393
17	4·5	1.5	6	1	Ditto	E			Maximum Temperature in the Shade .... 9°.70 or 49.46
18	6.5	—1.5	8.5	—4.5	Ditto	NE			Minimum Temperature in ditto ..... — 7°.00 — 19.40
19	4·7	—1	7.2	—4	Ditto	——			Maximum Temperature in the Sun ..... 16°.50 — 61.70
20	4·7	—4·5	8	—8	Brisk	N		.10	Minimum of Terrestrial Radiation ..... —12°.20 — 10.04
21	2·5	—2·5	8.5	—3	Little	——		.04	Mean Temperature of External Air ..... 3°.30 — 37·94
22	4·5	—5	9·5	—8	Ditto	S		.01	
23	4·5	—7	10	—12.2	Ditto	SE		.01	
24	4·5	—2.5	10.5	—7	Brisk	NE			
25	6.5	—0.5	11	—5	Little	NW		.02	
26	9·5	—4·5	14.5	—9	Ditto	——		.06	
27	6.7	0	8	—1.5	Brisk	W		.10	
28	9·5	2.5	13·5	0.5	Ditto	——			
29	9·5	1.3	13	0	Ditto	SW			
30	9	—3.5	16	—9	Little	NE			
31	9	—3	16.5	—8.5	Ditto	——			
Cent	6.86	—0.26	10.57	—3.26				0.54	
Fah.	44·34	31·54	51.02	26.14					

Winds.

North.....	5 days.	N. East.....	12 days.
South	1 ..	S. East.....	1 ..
East	1 ..	N. West.....	4 ..
West.....	2 ..	S. West	5 ..

31 days.

Amount of Rain..... 0.54 inches.

APRIL.

		Morning.					Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	29.964	2.5	0	2.5	Fine	29.929	9.5	—1	10.5	Fine	29.916	1	1	—	Clear
S.	2	—.956	3	0	3	Clear and do.	—.928	8	—2	10	Slightly Clouded	—.819	2.5	1.5	1	Cloudy & Fine
M.	3	—.509	5	5	—	Cold & Windy	—.771	5.5	—2.5	8	Cold & Dry	—.576	1	1	—	Clear
T.	4	—.636	4	1	3	Cold and Dry	—.687	7.5	—3	10.5	Ditto	—.725	2	1	1	Cloudy
W.	5	—.720	2.5	0	2.5	Bleak & Cold	—.741	7.5	—3	10.5	Ditto	—.728	2	2	—	Clear & Windy
Th.	6	—.936	3	0	3	Ditto	—.938	7	—6	13	Ditto	30.013	3	3	—	Cloudy & Fine
F.	7	30.122	2.5	0	2.5	Ditto	30.137	5.5	3	2.5	Hail Showers	—.310	2	—5	7	Stormy
S.	8	—.376	3.5	—3	6.5	Clear & Cold	—.374	7.5	—12	19.5	Cold & very dry	—.356	—1	—5	4	Clear & Cold
S.	9	—.332	3	—2.5	5.5	Cold and Dry	—.277	5	—12	17	Ditto	—.242	—3	—3	—	Ditto
M.	10	—.156	1	—2.5	3.5	Ditto	—.060	4	—3	7	Do. & Overcast	29.892	—2	—2.5	0.5	Slightly clouded
T.	11	29.720	1.5	—2	3.5	Clear	29.661	7	—6	13	Cloudy & Fine	—.646	—1	—1	—	Ditto
☽ W.	12	—.680	1	1	—	Hazy	—.717	5	—4	9	Bleak & Cold	—.788	1.5	0	1.5	Ditto
Th.	13	—.889	2	2	—	Overcast	—.903	4.5	1.5	3	Ditto	—.938	2	2	—	Cold & Stormy
F.	14	—.937	3.5	—2.5	6	Ditto	—.896	8.5	0	8.5	Overcast	—.849	2	2	—	Slightly Overcast
S.	15	—.719	3	1	2	Clear	—.617	9.5	0	9.5	Fine	—.493	2	1.5	0.5	Ditto
S.	16	—.424	1.5	1.5	—	Snowing	—.425	4	4	—	Cloudy & Cold	—.523	2	2	—	Cloudy & Cold
M.	17	—.792	3	—1	4	Overcast	—.762	7	1	6	Bleak & Cold	—.831	5	2	3	Bleak & Cold
T.	18	—.927	4.5	4	0.5	Ditto	—.951	6	6	—	Slight Rain	—.980	5.5	5.5	—	Hazy
W.	19	—.978	6.5	6.5	—	Hazy	—.964	13.5	8.5	5	Fine	—.914	1	1	—	Clear
○ Th.	20	—.840	12	10	2	Fine	—.809	8.5	8.5	—	Rain	—.831	2.5	2.5	—	Ditto
F.	21	—.810	6	6	—	Ditto	—.722	5.5	5.5	—	Ditto	—.665	5	5	—	Cloudy & Fine
S.	22	—.574	7.5	7.5	—	Cloudy & Do.	—.560	10	3	7	Fine	—.639	5	3	2	Ditto
S.	23	—.672	7.5	5.5	2	Cloudy	—.673	8.5	8.5	—	Rain	—.657	7	7	—	Ditto
M.	24	—.734	8.5	8.5	—	Very Fine	—.766	12	7	5	Very Fine	—.842	5	5	—	Clear & Fine
T.	25	—.932	8	7	1	Fine	—.931	13.5	8	5	Cloudy	—.880	8	8	—	Slight Rain
W.	26	—.840	10.5	10.5	—	Ditto	—.856	16	11	5	Very Fine	—.866	6	6	—	Very Fine
☾ Th.	27	—.778	11	11	—	Ditto	—.755	11	11	—	Rain	—.670	3.5	3.5	—	Ditto
F.	28	—.700	11	11	—	Ditto	—.550	10.5	10.5	—	Ditto	—.606	8	7	1	Ditto
S.	29	—.552	10	10	—	Overcast	—.435	11	11	—	Ditto	—.376	10	10	—	Slight Rain
S.	30	—.436	11	11	—	Rain	—.450	15	13	2	Fine	—.641	8	7	1	Clear
Cent.		29.821	5.28	3.52	1.76		29.808	8.45	2.24	6.21		29.803	3.18	2.43	0.75	
Fah.			41.50	38.33	3.17			47.21	36.03	11.18			37.72	36.37	1.35	

APRIL.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	10.5	—3.7	16	—9	NW	Little		This was perhaps the coldest April ever remembered. The mean temperature was certainly lower than that of any corresponding month for at least the last 40 years, being only about 42° Fahr., which was nearly 7° lower than the average of April for the 10 preceding years. During the first three weeks, the wind was almost constantly from the North or North-East, and exceedingly cold and dry for the period of the season. A hazy state of the atmosphere prevented the Sun's rays from reaching the earth, whilst the wind was from the points above mentioned, and when it changed, after the 20th, the weather was generally cloudy and wet. Most kinds of foliage under glass were evidently assuming a yellow tinge. Vegetation in the open air made no efficient progress. The common Lilac was a month later than usual in coming into leaf, and its buds remained in a half expanded state from the beginning till the end of the month.
2	10	2	16	—1	N	Ditto	.03	
3	9.5	—1	14	—4.7	W	Brisk		
4	6.7	1	11	0	NE	Little		
5	6.7	—0.5	11	—2	——	Brisk		
6	9	—2	15.5	—5.5	N	Ditto		
7	8.5	0.5	16	—2	NE	Ditto	.02	
8	8.5	—2.5	15.5	—6	——	Ditto		
9	8.5	—3	13	—5	——	Ditto		
10	6.3	—5	9	—10	——	Ditto		
11	7.5	—4.5	16	—9	S	Little		
12	6	1	12	0	E	Brisk	.01	
13	4.7	0.5	10	—1	NE	Ditto		
14	9	—3.5	15	—8	——	Little		
15	13	0.5	21.5	—4	E	Ditto	.01	
16	5	1	10	0	NE	Brisk	.01	
17	10	2.7	15.5	2	N	Ditto		
18	6.5	5	11	5	——	Little	.01	
19	15.5	—1.5	16.5	—6.5	——	Ditto		
20	13	—2	14	—6.5	W	Ditto	.01	
21	8	0	10	—2.7	S	Ditto	.20	
22	10.5	4	13	3	W	Ditto	.04	
23	11.5	1.5	13.3	—2.5	——	Ditto	.06	
24	15.7	—1	17	—5	SW	Ditto	.24	
25	14.5	7	16	7	——	Ditto	.21	
26	17.5	8	20	—1	——	Ditto	.02	
27	12	0.5	19.5	—2	S	Ditto	.04	
28	12.5	6	14.5	3.5	——	Ditto	.01	
29	12	8.5	12	8	——	Ditto	.19	
30	16.2	8	17	6	——	Brisk	.02	
Cent	10.16	0.91	14.36	—1.96			1.13	
Fah.	50.28	1.63	57.84	28.48				

Mean Pressure from the 3 daily observations 29.811 inches. Fahr.

—— Temperature ..... Ditto	5°.64	or	42.15
—— Dew Point ..... Ditto	2°.73	—	36.91
—— Degree of Dryness ... Ditto	2°.91	—	5.24
—— Degree of Moisture .. Ditto	.836		
—— Force of Vapour. .... Ditto	.255 inch.		
Least observed degree of Moisture	.289		
Maximum Temperature in the Shade.....	17°.50	or	63.50
Minimum Temperature in ditto .....—	5°.00	—	23.00
Maximum Temperature in the Sun	21°.50	—	70.70
Minimum of Terrestrial Radiation .....—	10°.00	—	14.00
Mean Temperature of External Air.....	5°.53	—	41.95

WINDS.

North.....5 days.		N East.....9 days.	
South.....6	..	S. East.....0	..
East.....2	..	N. West.....1	..
West.....4	..	S. West.....3	..

30 days.

Amount of Rain..... 1.13 inches.

MAY.

		Morning.					Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
M.	1	29.720	14	13	1	Fine	29.760	16	13	3.5	Fine	29.848	8.5	8.5	—	Clear & Fine
T.	2	—.973	11.5	10	1.5	Ditto	—.971	17.5	9	8.5	Very Fine	—.928	11	10	1	Cloudy & Do.
W.	3	—.839	12.5	12.5	—	Hazy	—.727	18	7	11	Dry Haze	—.687	11	9.5	1.5	Ditto
● Th.	4	—.830	7	5	2	Overcast	—.890	15	5	10	Very Fine	—.955	7	7	—	Clear
F.	5	30.059	9	6	3	Clear	30.082	15	4	11	Ditto	30.094	4	4	—	Ditto
S.	6	—.164	9.5	6	3.5	Fine	—.163	14	3	11	Ditto	—.144	6	6	—	Ditto
S.	7	—.100	10	5	5	Ditto	—.108	15	5	10	Ditto	29.973	8	7	1	Cloudy
M.	8	29.859	10	10	—	Slight Rain	29.797	11.5	11.5	—	Rain	—.647	8	8	—	Rain
T.	9	—.659	6.5	6.5	—	Cloudy	—.638	9.5	3	6.5	Fine	—.636	3	3	—	Clear & Cold
W.	10	—.670	6	6	—	Do. and Cold	—.696	8.5	5	3.5	Cloudy & Cold	—.821	2.5	2.5	—	Ditto
Th.	11	30.006	6	6	—	Fine	30.041	12	3	9	Fine	30.006	7	7		Cloudy & Cold
☽ F.	12	29.883	8	8	—	Rain	29.814	11.5	11.5	—	Drizzly	29.881	5	5	—	Clear
S.	13	—.843	9.5	9.5	—	Fine	—.795	14	14	—	Cloudy	—.883	6	6	—	Ditto
S.	14	—.810	9.5	9.5	—	Hazy	—.786	15	6	9	Do. & Fine	—.990	7	7	—	Cloudy & Windy
M.	15	30.128	8	6	2	Cloudy and Cold	30.129	14	6	8	Ditto	30.228	7	6	1	Do. & Fine
T.	16	—.330	7	7	—	Overcast	—.329	13	9	4	Fine	—.361	5	5	—	Clear & Do.
W.	17	—.333	13	12	1	Fine	—.355	21.5	14	7.5	Very Fine	—.167	11	9	2	Ditto
Th.	18	—.211	10	6	4	Ditto	—.196	13	4	9	Fine but Cold	—.079	3	2	1	Ditto
F.	19	—.119	5	5	—	Cold Rain	—.109	11	5	6	Cloudy	29.813	6	6	—	Cloudy & Do.
○ S.	20	—.018	6	6	—	Slight Rain	29.941	11	4	7	Ditto	—.890	6	6	—	Ditto
S.	21	29.772	9	9	—	Hazy	—.695	8	8	—	Rain	—.763	3.5	3.5	—	Clear
M.	22	—.801	7.5	4.5	3	Cloudy & Cold	—.841	6.5	6.5	—	Stormy Do.	—.893	4	4	—	Ditto & Cold
T.	23	—.987	7.5	5	2.5	Overcast & Do.	—.999	14	7	7	Cloudy & Fine	—.992	3.5	3.5	—	Ditto
W.	24	—.995	9	9	—	Ditto	—.962	15	9	6	Slight Haze	—.893	3	2	1	Ditto
Th.	25	—.864	8	8	—	Ditto	—.856	16.5	6	10.5	Fine	—.868	9.5	8	1.5	Cloudy & Fine
F.	26	—.922	13	10	3	Fine	—.908	19.5	7	12.5	Very Fine	—.897	9	8	1	Clear & Do.
☾ S.	27	30.005	12	10	2	Very Fine	30.009	20	7	13	Ditto	30.033	9	8	1	Ditto
S.	28	—.010	16	11	5	Ditto	29.994	17	7	10	Ditto	29.979	12.5	12.5	—	Cloudy & Fine
M.	29	29.994	15.5	14	1.5	Ditto	30.002	21.5	7	14.5	Ditto	30.026	11	9	2	Clear & Do.
T.	30	30.101	14	10	4	Fine	—.065	18.5	7	11.5	Fine	—.008	10	9.5	0.5	Ditto
W.	31	—.111	12	12	—	Slight Rain	—.009	19.5	14	5.5	Overcast & Do.	29.982	12	11	1	Ditto
Cent.		29.971	9.72	8.30	1.42		29.957	14.58	7.52	7.06		29.944	6.74	6.08	0.66	
Fah.			49.49	46.94	2.55			58.24	45.53	12.71			44.13	42.94	1.19	

MAY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	18	6.7	24	4.5	SW	Strong		The aspect presented by vegetation in this month, was similar to that exhibited in April in ordinary seasons. The common Hawthorn, for instance, was not farther advanced in leaf on the first of this month than it generally is on the first of the preceding. The last few days were fine ; but with this exception, the weather may be said to have been very unfavourable; for if the days were occasionally fine, the nights were cold, and frequently frosty. The mean temperature, scarcely 50° Fahr., was 6° below the average; and it was only 1° above the usual average of April. On the ninth there was a heavy shower of hail about ½ past 3 p.m.; this was followed by frost at night. The 22nd was stormy with rain and hail, and the night of the 23rd was frosty.
2	18	6.7	28	3	W	Little		
3	16.2	5.7	20	5	E	Ditto		
4	15.2	4	25.5	2	N	Ditto		
5	16	0	25	—4	——	Ditto		
6	14.7	0	25	—5	NE	Ditto		
7	15	5	25.5	3	NW	Ditto		
8	13	2.5	15.5	2.5	S	Ditto	.29	
9	10	—1	17	—4	NE	Ditto	.06	
10	11	0.5	18.5	—4	N	Ditto	.10	
11	13	7	21	1	W	Ditto	.01	
12	15	0.5	23	—3.5	S	Ditto	.06	
13	14.7	2	23	—2	——	Ditto	.10	
14	15	6	22	4	SE	Ditto	.20	
15	15.5	5.5	21.5	4	N	Ditto		
16	20	2.3	26.5	—0.5	——	Ditto		
17	22	8	28.5	6	NW	Brisk		
18	13.5	4.5	19	2	N	Ditto		
19	11.7	1	18.5	—3.5	NE	Ditto	.01	
20	11.5	2.5	13	—1.5	——	Ditto	.01	
21	10	1.5	14	—3	——	Little	.12	
22	11	2.5	15.7	—1	N	Brisk	.03	
23	14.5	—0.6	23.5	—5	NE	Little		
24	17	—1	21.5	—5	SW	Ditto		
25	18	6.7	27.5	4.5	S	Ditto		
26	19	0.5	28	—4	SW	Ditto		
27	21.5	3.5	31	0	——	Ditto		
28	21	9.5	30	9	E	Ditto		
29	23.5	7	31.5	5	S	Ditto		
30	18.5	5	28	2	W	Brisk	.05	
31	19	12	27.5	9.5	SW	Little	.04	
Cent.	15.84	3.74	23.16	0.67			1.07	
Fah.	60.51	38.73	73.68	33.20				

Mean Pressure from the 3 daily observations	29.957	inches	
—— Temperature .....Ditto.....	10°.35	or	50.63
—— Dew Point .....Ditto.....	7°.30	—	45 14
—— Degree of Dryness ....Ditto.....	3°.05	—	5.49
—— Degree of Moisture ...Ditto.....	.833		
—— Force of Vapour .....Ditto.....	.341	inch.	
Least observed degree of Moisture	.425		
Maximum Temperature in the Shade	23°.50	or	74.30
Minimum Temperature in ditto.....	— 1°.00	—	30.20
Maximum Temperature in the Sun	31°.50	—	88.70
Minimum of Terrestrial Radiation	— 5°.00	—	23.00
Mean Temperature of External Air	9°.79	—	49.62

WINDS.

North.....	7 days.	N. East	6 days.
South.....	5 ..	S. East	1 ..
East	2 ..	N. West	2 ..
West.....	3 ..	S. West	5 ..

31 days.

Amount of Rain .....1.07 inches.

JUNE.

	Morning.						Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
Th.	1	29.913	15.5	15.5	—	Slight Rain	29.971	15.5	13	2.5	Fine, Showery	30.010	9	8	1	Clear and Fine
F.	2	30.038	13	10	3	Fine	30.035	15	10	5	Overcast	29.984	8	7	1	Ditto
● S.	3	29.985	10	10	—	Rain	29.996	14.5	14.5	—	Hazy	30.025	6.5	6.5	—	Ditto
S.	4	30.121	11	9.5	1.5	Fine	30.108	20.5	10	10.5	Cloudy & Fine	—.000	13	11	2	Very Fine
M.	5	—.152	17	14	3	Ditto	—.123	22.5	12	10.5	Very Fine	—.100	14.5	14.5	—	Ditto
T.	6	—.103	14	12	2	Clear & Do.	—.119	20	9	11	Ditto	—.173	10	9	1	Ditto
W.	7	—.201	10	6	4	Dry Haze	—.124	15	5	10.5	Ditto	—.083	7	4	3	Clear & Cold
Th.	8	29.938	11.5	9	2.5	Ditto	29.911	15.5	8	7.5	Dry Haze	29.861	12	11	1	Cloudy
F.	9	—.777	18	15	3	Very Fine	—.731	23	18	5	Fine	—.564	15	15	—	Heavy Rain
S.	10	—.631	18	17	1	Cloudy	—.660	22	16	6	Cloudy & Do.	—.653	13	12	1	Fine
☽ S.	11	—.681	15	15	—	Rain	—.776	20	15	5	Very Fine	—.732	14	13	1	Ditto
M.	12	—.940	16	16	—	Overcast	—.911	18	18	—	Slight rain	—.859	15	15	—	Cloudy & Fine
T.	13	—.830	20	19	1	Do. and Fine	—.820	22	20	2	Very Fine	—.740	16	16	—	Ditto
W.	14	—.772	18	18	—	Cloudy	—.837	22.5	22.5	—	Showery	—.853	14	14	—	Clear & Fine
Th.	15	—.990	17	15.5	1.5	Very Fine	—.992	25.5	16	9.5	Very Fine	—.954	16	16	—	Ditto
F.	16	30.001	17	16	1	Slight Haze	—.904	25.5	21.5	4	Ditto	—.857	18	18	—	Very Fine
S.	17	29.939	18.5	16	2.5	Cloudy & Fine	—.913	23	20	3	Ditto	29.918	19	19	—	Ditto
○ S.	18	—.798	14	14	—	Rain	—.766	19.5	15	4.5	Ditto	—.857	17	17	—	Ditto
M.	19	—.940	19	15	4	Fine	—.938	20	18	2	Ditto	—.924	15	14	1	Ditto
T.	20	—.928	22	18	4	Ditto	—.915	25	20	5	Ditto	—.921	15	14	1	Ditto
W.	21	30.047	18.5	16	2.5	Overcast	30.070	24	15	9	Ditto	30.173	13.5	13	0.5	Ditto
Th.	22	—.295	18	14	4	Very Fine	—.296	26	16	10	Ditto	- .299	15.5	15.5	—	Ditto
F.	23	—.361	20	17	3	Ditto	—.336	25	13	12	Ditto	—.279	15	15	—	Ditto
S.	24	- .241	17.5	16	1.5	Ditto	—.154	26	18	8	Ditto	—.120	15	14	1	Ditto
☾ S.	25	—.088	20	15	5	Ditto	—.075	26	16	10	Ditto	—.075	16	14	2	Ditto
M.	26	—.215	18	15	3	Ditto	—.237	23	14	9	Ditto	—.239	16	15	1	Ditto
T.	27	—.234	15	10	5	Dry Haze	—.213	20	9	11	Fine	—.192	10	8	2	Clear and Cold
W.	28	—.188	15.5	11	4.5	Cloudy	—.173	20	11	9	Ditto	—.154	12	12	—	Do. & Fine
Th.	29	—.154	16	12	4	Very Fine	—.110	24	4	20	Very Dry	—.021	14	14	—	Ditto
F.	30	—.142	20	16	4	Ditto	.136	26	16	10	Fine	—.234	10	9	1	Clear & Cold
Cent.		30.021	16.43	14.08	2.35		30.011	21.48	14.45	7.03		29.995	13.23	12.55	0.68	
Fah.			61.57	57.34	4.23			70.66	58.01	12.65			55.81	54.59	1.22	

JUNE.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	16.5	6.5	23.5	3.5	NW	Brisk	.06		
2	16	6.5	23.5	3.5	——	Little	.14		
3	17.5	2	25	—1.5	——	Ditto			
4	21.5	9.7	32	8	——	Ditto			
5	23.7	9.5	34.5	8.5	——	Ditto	.11		
6	25.5	4.5	29.5	2	——	Ditto			
7	15.5	4	24	2	NE	Brisk			
8	20.5	8.5	21	7	E	Little			
9	21.7	11	29	9.5	——	Strong	.36		
10	20	9	20	7	S	Ditto	.09		
11	20	9.5	26	8	SW	Little	.01		
12	21	13.5	22	13	S	Ditto	.03		
13	24	15	25	13	——	Ditto	.20		
14	24	8.5	27	6.5	——	Ditto	.11		
15	26.5	11.5	32	9.5	——	Ditto			
16	26.5	11.5	32	11	E	Ditto			
17	24	11.5	27.5	11	W	Ditto	.20		
18	21.7	11.5	25.5	11	NW	Ditto			
19	23.5	8.5	30.5	6	SW	Ditto			
20	24.3	11.5	32.5	10	S	Ditto			
21	24	8.5	35	5.5	W	Ditto			
22	27	10	38.5	9	NW	Ditto			
23	24.7	8.5	34.5	6	NE	Ditto			
24	26	9	35.5	6	SE	Ditto			
25	26	10	35	8	E	Ditto			
26	21	6.7	26	5	——	Ditto			
27	20	4.5	29	1	SE	Ditto			
28	21.5	5.5	29.5	1.7	NE	Ditto			
29	25.5	7.7	32	5	——	Ditto			
30	25.5	7.2	33	5	——	Ditto			
Cent	22.50	8.71	29.00	6.69			1.31		
Fah.	72.50	47.67	84.20	44.04					

The character of this month was very different from that of the three preceding. In these, the mean temperature was, for March, April, and May, respectively 5°, 7°, and 6°, below the average: in this it was only 1° below, notwithstanding the unusual coldness of the earth from the previous want of sun heat. Rain was of frequent occurrence in the former part of the month, but none fell after the 18th. The atmosphere on the 28th was excessively dry.

Mean Pressure from the 3 daily observations	30.009	inches.	Fahr.
—— Temperature ..... Ditto	17°.04	or	62.67
—— Dew Point ..... Ditto	13°.69	—	56.64
—— Degree of Dryness ... Ditto	3°.35	—	6.03
—— Degree of Moisture .. Ditto	.827		
—— Force of Vapour ..... Ditto	.502	inch.	
Least observed degree of Moisture	.300		
Maximum Temperature in the Shade.....	27°.00	or	80.60
Minimum Temperature in ditto	2°.00	—	35.60
Maximum Temperature in the Sun	38°.00	—	100.40
Minimum of Terrestrial Radiation	1°.50	—	29.30
Mean Temperature of External Air	15°.60	—	60.08

Winds.

North	0 days	N. East	5 days
South	6 ..	S. East	2 ..
East	5 ..	N. West	8 ..
West	2 ..	S. West	2 ..

30 days.

Amount of Rain..... 1.31 inches.

JULY.

	Morning.						Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	30.332	15	12	3	Cloudy	30.233	18.5	9	9.5	Fine	30.300	9	8	1	Clear & Cold
● S.	2	—.324	14	10	4	Fine	—.265	22.5	7	15.5	Do. very Dry	—.190	13	11	2	Ditto & Fine
M.	3	—.242	17	14	3	Ditto	—.170	25	11	14	Ditto	29.990	13	12	1	Ditto
T.	4	—.140	19.5	17	2.5	Ditto	—.126	24	13	11	Very Fine	30.148	17	15	2	Very Fine
W.	5	—.141	19	16	3	Ditto	—.130	26	15	11	Ditto	—.091	18	18	—	Ditto
Th.	6	—.132	17	17	—	Overcast	—.120	25	20	5	Ditto	—.184	15	15	—	Ditto
F.	7	—.240	16	14	2	Ditto	—.233	22.5	17	5.5	Ditto	—.229	14	14	—	Ditto
S.	8	—.173	22	20	2	Very Fine	—.127	26	15	11	Ditto	—.173	14	14	—	Cloudy & Do.
S.	9	—.123	15	10	5	Do. and Dry	—.097	19.5	13	6.5	Ditto	—.055	13	12	1	Fine
M	10	29.969	15.5	13	2.5	Fine	29.932	23	13	10	Ditto	29.931	14.5	12	2.5	Clear and Do.
☽ T.	11	—.969	14	12	2	Very Fine	—.946	24	3	21	Ditto	—.944	15	12	3	Fine
W.	12	—.999	16	13	3	Overcast	—.932	21.5	14	7.5	Ditto	—.919	13	12	1	Ditto
Th.	13	—.813	18	17	1	Ditto	—.818	20	20	—	Slight Rain	—.785	14	14	—	Ditto
F.	14	—.768	18.5	18.5	—	Ditto	—.764	24	20	4	Cloudy & Fine	—.700	15	15	—	Heavy showers
S.	15	—.888	20.5	18	2.5	Cloudy	—.847	22	22	—	Showery	—.865	14	14	—	Fine
S.	16	—.976	18	15	3	Very Fine	—.950	22	20	2	Fine	—.960	14	14	—	Ditto
○ M.	17	30.033	16.5	14	2.5	Clear and Do.	—.989	22.5	15	7.5	Cloudy & Do.	—.954	16	16	—	Ditto
T.	18	29.855	18	18	—	Cloudy	—.823	23	20	3	Ditto	—.825	16	16	—	Ditto
W.	19	—.835	18	17	1	Fine	—.798	23	13	10	Very Fine	—.783	16	16	—	Rain
Th.	20	—.863	17	15	2	Overcast	—.699	20.5	14	6.5	Cloudy & Do.	—.700	15	15	—	Fine
F.	21	30.017	17.5	16	1.5	Cloudy & Fine	30.025	20	10	11	Very Fine	30.040	14	14	—	Very Fine
S.	22	—.082	17.5	16	1.5	Very Fine	—.059	22.5	14	8.5	Ditto	30.039	16	16	—	Ditto
S.	23	—.043	21	20	1	Ditto	29.988	27	18.5	8.5	Ditto	29.988	19.5	19.5	—	Rain
☾ M.	24	—.103	18	15	3	Ditto	30.118	24	16	8	Ditto	30.100	19	19	—	Fine
T.	25	—.087	18	15	3	Ditto	—.097	24.5	14	10.5	Ditto	—.081	19	18	1	Very Fine
W.	26	—.062	22	18	4	Ditto	—.061	25.5	17	8.5	Ditto	—.049	20	19	1	Ditto
Th.	27	—.008	21.5	18	3.5	Ditto	29.916	29.5	18	11.5	Very Hot	29.825	22	19	3	Ditto
F.	28	29.780	20	18	2	Ditto	—.786	25	18	7	Ditto & Showery	—.740	18.5	16	2.5	Ditto
S.	29	—.374	16.5	16.5	—	Heavy Rain	—.293	22	18	4	Cloudy	—.312	18.5	18.5	—	Boisterous
S.	30	—.567	16	16	—	Cloudy	—.632	19	19	—	Ditto	—.640	12	12	—	Showery
M.	31	—.893	16	16	—	Very Fine	—.888	22	20	—	Showery	—.873	15	15	—	Cloudy
Cent.		29.994	17.69	15.65	2.04		29.963	23.01	15.33	7.68		29.949	15.54	14.87	0.67	
Fah.			63.84	60.17	3.67			73.41	59.59	13.82			59.97	58.76	1.21	

JULY.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	19	3	31	— 0.5	E	Brisk		
2	24.5	7.5	35	4.5	——	Little		Dry weather still continued till the 13th, after which period vegetation had a timely and sufficient supply of rain. The mean temperature was only a degree below that of the average of July for 10 preceding years. The thermometer was lowest on the night of the first, a depression resulting from the circumstance of the wind having come from the North-east for some days previous. The afternoon of the 29th was excessively boisterous.
3	27	11	34	6.5	NW	Ditto		
4	24	9.5	35	7.5	W	Ditto		
5	25.5	14	35	13	SW	Ditto		
6	25.6	10.5	32	8.5	W	Ditto		
7	26	10	34	8	NE	Ditto		
8	27.5	9.5	40	7.5	E	Ditto		
9	20	7.5	22	6.5	SE	Ditto		
10	25	8.5	33	7	——	Ditto		
11	24.5	11.5	29.5	10.5	E	Brisk		
12	19.5	9.5	21	7	——	Little		
13	24.5	9.5	28.5	9	SW	Ditto		
14	27.5	13	35	10	——	Ditto	.02	
15	23	10	35	8	——	Ditto	.72	
16	23.7	9	29.5	7	——	Ditto	.08	
17	21.5	12.7	25	13	W	Ditto	.32	
18	22.7	12.5	29.5	11	——	Ditto	.01	
19	21.8	11.5	31	10.5	——	Ditto	.12	
20	22	9.5	22.5	8	——	Ditto	.04	
21	22.7	9	27.5	7	NW	Ditto		
22	25	10	34	9	——	Ditto	.02	
23	27.7	13	34	12	——	Ditto		
24	23.5	13.7	30	10	——	Ditto		
25	27	15.5	34	15.5	N	Ditto		
26	29.5	8.7	35	6	SW	Ditto		
27	29.5	4.5	32	13	S	Brisk		
28	25.5	13.5	37	12.5	SW	Little	.30	
29	21.5	12	26	11.5	——	Strong	.03	
30	21	7	29	5.5	W	Little	.06	
31	23.5	12	32	11.5	S	Ditto	.06	
Cent	24.30	10.32	30.90	8.96			1.78	
Fah.	75.74	50.57	87.62	48.12				

Mean Pressure from the 3 daily observations	29.969 inches.		Fahr.
—— Temperature .....Ditto.....	18°.74	or	65.73
—— Dew Point .....Ditto.....	15°.28	—	59.50
—— Degree of Dryness ....Ditto.....	3°.46	—	6.23
—— Degree of Moisture....Ditto.....	.849		
—— Force of Vapour.....Ditto.....	.551	inch.	
Least observed degree of Moisture.....	.273		
Maximum Temperature in the Shade....	29°.50	or	83.30
Minimum Temperature in ditto.....	3°.00	—	37.40
Maximum Temperature in the Sun	40°.00	—	104.00
Minimum of Terrestrial Radiation	—0°.50	—	31.91
Mean Temperature of External Air.....	17°.31	—	63.16

WINDS.

North.....1	days.	N. East 1	days.
South.....2	..	S. East.....2	..
East 5	..	N. West....5	..
West 7	..	S. West 8	..
	31 days.		

Amount of Rain ..... 1.78 inches.

AUGUST.

			Morning.				Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
● T.	1	29.769	15	15	—	Rain	29.704	16.5	16.5	—	Rain	29.693	16.5	16.5	—	Rain
W.	2	—.677	18.5	18.5	—	Cloudy	—.671	20.5	20.5	—	Cloudy	—.699	16	16	—	Ditto
Th.	3	—.697	19.5	18	1.5	Fine	—.697	21.5	18	3.5	Fine	—.665	17	16	1	Cloudy & Fine
F.	4	— 863	17.5	16	1.5	Ditto	—.921	22.5	18	4.5	Ditto	30.047	15	15	—	Rain
S.	5	30.158	14	14	—	Very Fine	30.178	21	10	11	Very Fine	—.187	14	13	1	Very Fine
S.	6	—.251	15	14	1	Ditto	—.249	22	14	8	Ditto	—.291	13	13	—	Fine
M.	7	—.460	16.5	14	2.5	Fine	—.357	19	17	2	Cloudy & Fine	—.382	13	13	—	Ditto
T.	8	—.378	16.5	13	3.5	Ditto	—.331	20	15	5	Fine	—.282	15	13	2	Ditto
◑ W.	9	—.260	16.5	15	1.5	Ditto	—.039	23	17	6	Ditto	—.013	17.5	15	2.5	Ditto
Th.	10	29.952	17	16	1	Overcast	29.914	24	18	6	Ditto	29.879	18	18	—	Ditto
F.	11	—.852	20.5	20.5	—	Very Fine	—.985	24	19	5	Very Fine	—.929	17	17	—	Very Fine
S.	12	30.002	16	16	—	Hazy	30.081	24	20	4	Ditto	—.987	18	18	—	Ditto
S.	13	—.153	18	18	—	Very Fine	—.166	24	13	11	Ditto	30.117	18	18	—	Ditto
M.	14	—.259	18	17	1	Ditto	—.242	28.5	16	12.5	Very Hot	—.252	18	18	—	Ditto
T.	15	—.261	18	16	2	Ditto	—.211	24	14	10	Ditto	—.200	18	18	—	Ditto
○ W.	16	—.160	17	17	—	Ditto	—.118	20	20	—	Cloudy	—.031	19	19	—	Ditto
Th.	17	—.021	21	21	—	Foggy	29.999	28	28	—	Sultry	—.064	20	20	—	Ditto
F.	18	—.240	18.5	18.5	—	Hazy	30.150	25	21	4	Very Hot	—.149	19	19	—	Ditto
S.	19	—.109	19	19	—	Foggy	—.043	28.5	20	8.5	Sultry	29.939	21	21	—	Ditto
S.	20	29.905	20	20	—	Fine	—.026	24	24	—	Slight showers	—.983	16.5	16.5	—	Cloudless
M.	21	30.079	20	17	3	Ditto	—.063	25	18	7	Fine	30.047	17	17	—	Fine
T.	22	—.155	18.5	18	0.5	Overcast	—.148	23	23	—	Sultry, showers	—.084	19	19	—	Rain
◖ W.	23	—.045	18.5	18.5	—	Rain	—.034	22	22	—	Cloudy	—.058	13	13		Ditto
Th.	24	—.202	14	12	2	Hazy	—.210	18.5	10	8.5	Fine	—.215	13	13	—	Fine
F.	25	—.224	14	12	2	Fine	—.178	20.5	15	5.5	Very Fine	—.183	13	13	—	Ditto
S.	26	29.885	18.5	18.5	—	Slight haze	29.947	19	19	—	Rain, Thunder	29.940	13	13	—	Cloudy
S.	27	30.176	12	7	5	Very clear	30.188	16	16	—	Very Fine	30.132	13	13	—	Fine
M.	28	—.053	11.5	10	1.5	Fine	29.933	20	14	6	Ditto	29.741	13	13	—	Cloudy & Do.
T.	29	29 507	13	13	—	Rain	—.481	15	15	—	Rain	—.437	13	13	—	Rain
W.	30	—.388	12.5	12.5	—	Heavy Rain	—.476	15	15	—	Clearing	—.515	10	10	—	Clear
Th.	31	—.446	11	11	—	Clear	—.424	15	15	—	Very Fine	—.396	8	8	—	Ditto
Cent.		30.018	16.56	15.64	0.92		30.005	21.58	17.45	4.13		29.985	15.63	15.42	0.21	
Fah.			61.80	60.15	1.65			70.84	63.41	7.43			60.13	59.75	0.38	

AUGUST.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	19·5	12·7	22	12	E	Little		·43	Although a large amount of rain fell in this month, the temperature was fully an average. The 17th was the hottest day in the season, the thermometer in the shade being nearly 87°. The sun's rays were not so powerful as usual; and after the 20th the weather became cloudy and wet. An Aurora Borealis was seen on the evening of the 25th: rain fell heavily on the morning of the 26th, and at noon there was much thunder and lightning, accompanied with rain. Thunder was also heard on the 30th about 2 P. M.; and between 2 and 3 P. M. there was a very heavy shower of hail. Some of the hailstones that fell in the garden measured 1¼ inch in circumference.
2	21·5	13·5	27	12	S	Brisk		·07	
3	22·7	11·5	30·5	10	SW	Strong		·34	
4	23	5·7	31·5	4	——	Brisk			
5	21·5	7·5	34·5	4·5	NW	Little			
6	20·5	9·7	34	8·5	N E	Ditto			
7	20·5	8	29	5	E	Ditto			
8	20·5	10	27·5	9·5	NE	Brisk			
9	24	13·5	30	12	——	Little			
10	25	15	31	14	——	Ditto		.01	
11	25·7	12	32	8·5	SW	Ditto			
12	26	10·5	35	9	——	Ditto			
13	26·7	9·5	35	7·5	——	Ditto			
14	29·5	10	34	9	SE	Ditto			
15	29·3	12·7	31·2	12	NE	Ditto			
16	29·5	14·5	34	13·5	SE	Ditto			
17	30·5	12·7	45·5	11	S	Ditto			
18	28	13·2	36	11·5	——	Ditto			
19	28·5	17·5	36	16·5	——	Ditto			
20	28	13·5	34	12	——	Brisk		.02	
21	22	12	33·5	11	SW	Ditto		.01	
22	23	17·5	33	17·5	——	Little		.30	
23	22·7	11·5	25	12	W	Ditto		.32	
24	20·5	5	25	2·3	NE	Ditto			
25	22	8	27	6	E	Ditto		.09	
26	24	4	28	1·5	S	Ditto		·51	
27	17·5	4	23	2	NE	Ditto			
28	20	10·5	28	10·5	S	Ditto		.17	
29	15	10·5	16·5	10·5	N	Ditto		·58	
30	17·5	5·5	24	3·5	NW	Ditto		.18	
31	19·5	6·4	25	3·5	W	Ditto		.01	
Cent	23.35	10.58	30.31	9.04				3.04	
Fah.	74.03	51.04	86·55	48.27					

Mean Pressure from the 3 daily observations	30.002	inches.	Fahr.
—— Temperature ..... Ditto	17°.92	or	64.25
—— Dew Point ..... Ditto	16°.17	—	61.10
—— Degree of Dryness ... Ditto	1°.75	—	3.15
—— Degree of Moisture ... Ditto	.901		
—— Force of Vapour ..... Ditto	.578	inch.	
Least observed degree of Moisture	.488		
Maximum Temperature in the Shade	30°.50	or	86.90
Minimum Temperature in ditto	4° 00	—	39.20
Maximum Temperature in the Sun	45°.50	—	113.90
Minimum of Terrestrial Radiation	1°.50	—	34.70
Mean Temperature of External Air	16°.96	—	62 53

WINDS.

North.....	1 days.	N. East.....	7 days.
South.....	7 ..	S. East	2 ..
East.....	3 ..	N. West	2 ..
West.....	2 ..	S. West.....	7 ..

31 days.

Amount of Rain.....3.04 inches.

SEPTEMBER.

		Morning.					Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
F.	1	29.361	12	11	1	Cloudy	29.386	16.5	16.5	—	Thunder Showers	29.400	11	11	—	Cloudy
S.	2	—.423	13	13	—	Ditto	—.504	17.5	14	3.5	Cloudy Fine	—.590	11	11	—	Ditto
S.	3	—.644	11.5	11.5	—	Ditto	—.711	14.5	14.5	—	Showery	—.797	11	11	—	Showery
M.	4	—.910	12	12	—	Ditto	—.925	15	10	5	Cloudy	—.916	9	9	—	Clear & Cold
T.	5	—.851	12.5	12.5	—	Hazy	—.893	16,5	16.5	—	Do. & Fine	30.003	10	10	—	Do.Lightning
W.	6	30.056	11.5	11.5	—	Foggy	30.033	15.5	12	3.5	Very Fine	30.045	11	11	—	Clear
) Th.	7	29.940	15	13	2	Fine	29.899	20.5	18	2.5	Ditto	29.844	16	16	—	Fine
F.	8	—.899	13.5	13.5	—	Rain	—.946	20	20	—	Sultry	—.807	16	16	—	Ditto
S.	9	—.865	17	17	—	Cloudy	—.754	22	20	2	Fine	—.794	13	13	—	Ditto
S.	10	—.860	15	13	2	Fine	—.931	21	16	5	Do. & Cloudy	—.864	12	12	—	Ditto
M.	11	—.814	18	15	3	Ditto	—.729	21	17	4	Ditto	—.726	12	12	—	Rain
T.	12	—.747	11	11	—	Hazy	—.674	18	10	8	Fine	—.384	11	10	1	Fine
W.	13	—.162	16	16	—	Cloudy	—.122	19	19	—	Cloudy & Do.	—.071	12.5	12.5	—	Ditto
○ Th.	14	—.331	12	12	—	Ditto	—.439	16	11	5	Cloudy	—.553	9	9	—	Ditto
F.	15	—.616	12	12	—	Clear	—.724	15	6	9	Fine	—.871	7	6	1	Ditto
S.	16	—.995	13.5	13.5	—	Overcast	—.996	16	16	—	Overcast	—.984	13	13	—	Ditto
S.	17	30.067	20	18	2	Fine	30.071	17	17	—	Ditto	30.086	17	17	—	Overcast
M.	18	—.032	18.5	17	1.5	Overcast	—.016	20	18	2	Ditto	—.020	11	11	—	Ditto
T.	19	—.144	18	18	—	Fine	—.124	22.5	20	2.5	Very Fine	—.091	18	18	—	Cloudy& Fine
W.	20	—.005	18	16	2	Ditto	29.939	21.5	18	3.5	Ditto	29.911	13.5	13.5	—	Fine
☾ Th.	21	29.913	15	15	—	Foggy	—.926	20.5	17	3.5	Ditto	30.012	11	11	—	Ditto
F.	22	30.045	15	15	—	Slight Haze	30.051	19	16	3	Ditto	—.065	14	14	—	Ditto
S.	23	—.110	13	11	2	Fine	—.116	16.5	9	7.5	Dry & Windy	—.135	13	12	1	Ditto
S.	24	—.220	12	9	3	Do. & Dry	—.245	14.5	6.5	8	Ditto	—.292	12	11	1	Clear
M.	25	—.313	10.5	10.5	—	Clear	—.311	15	10	5	Fine	—.305	7.5	7.5	—	Fine
T.	26	—.304	9.5	9.5	—	Ditto	—.252	16	9	7	Ditto	—.204	10	10	—	Ditto
W.	27	— 124	10	10	—	Fine	—.088	16.5	11	5.5	Cloudy & Do.	—.077	12	12	—	Ditto
Th.	28	—.083	11	10	1	Overcast	—.059	16	12	4	Ditto	—.064	9	9	—	Ditto
● F.	29	—.068	7	7	—	Foggy	—.046	16	9	7	Ditto	—.019	8.5	8.5	—	Ditto
S.	30	29.961	10	10	—	Ditto	29.946	18	13	5	Very Fine	29.949	10	10	—	Ditto
Cent.		29.893	13.43	12.78	0.65		29.895	17.76	14.06	3.70		29 895	11.70	11.56	0.14	
Fah.			56.17	55.00	1.17			63.96	57.30	6.66			53.06	52.81	0.25	

SEPTEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	17	7·5	23·5	7	W	Little	.02	The weather in this month was, on the whole fine, but rather cloudy and occasionally foggy. The quantity of rain was not half the usual amount; and the temperature was about 2° lower than the average, partly owing to the clouded state of the atmosphere, and partly to the equinoctial gales coming from the North-east instead of the South-west as they more generally do.
2	17	7	22	6.5	N	Ditto	.07	
3	14·5	9·5	20	8	——	Ditto	.10	
4	15	4·5	20	1.2	——	Ditto		
5	15·5	3·7	26	2	NE	Ditto	.02	
6	19·5	5	31	3	SW	Ditto		
7	19·5	11·5	31	12	S	Ditto	.20	
8	20	10	31	8	——	Ditto		
9	22	10	30	8	——	Brisk		Mean Pressure from the 3 daily observations 29.894 inches. Fahr.
10	21	11	29.5	10	SW	Ditto	.26	—— Temperature ..... Ditto ..... 14°.29 or 57.70
11	20.5	7	30	5·5	S	Ditto		—— Dew Point ..... Ditto ..... 12°.80 — 55.02
12	19	8.2	31	6	SE	Little	.09	—— Degree of Dryness .... Ditto ..... 1°.49 — 2.68
13	18.5	9	25·5	7	SW	Brisk	.09	—— Degree of Moisture .. Ditto ..... .915
14	16	6.7	24·5	4	W	Ditto	.02	—— Force of Vapour ..... Ditto ..... .476 inch.
15	16.5	4·5	27·5	1.5	NW	Ditto		Least observed degree of Moisture ..... .576
16	21	13.3	28.5	12	S	Little		Maximum Temperature in the Shade .... 22°.50 or 72.50
17	22	15·5	28	14	SW	Strong		Minimum Temperature in ditto ..... 1°.70 — 35.06
18	19.5	8	23	9·5	——	Ditto	.01	Maximum Temperature in the Sun ..... 33°.00 — 91.40
19	22	16	31	14.4	S	Little		Minimum of Terrestrial Radiation .....—1°.50 — 29.30
20	22.5	9	33	7	SE	Brisk		Mean Temperature of External Air ..... 13°.16 — 55.68
21	20.5	6	29·5	4	——	Little		
22	19.5	10.5	26.5	9	E	Brisk		
23	17.5	8.5	26.3	6.5	——	Strong		WINDS.
24	16	2·5	24·5	—0.5	——	Ditto		North .....3 days | N. East ....4 days.
25	16	4·5	26	2	NE	Brisk		South.....6 .. | S. East .....3 ..
26	16.5	1.7	26.5	—1.5	——	Little	.01	East.....6 .. | N. West.. .1 ..
27	15·5	9·5	23	9	E	Brisk		West ..... 2 .. | S. West ....5 ..
28	17	1.7	23·5	—1	NE	Little		30 days.
29	16.7	5·5	24·5	3·5	E	Brisk		
30	19	9.7	26.5	8	——	Little	.02	Amount of Rain.....0.91 inches.
Cent	18.42	7.90	26.76	6.18			0.91	
Fah.	65.15	46.22	80.16	43.12				

OCTOBER.

		Morning.				Noon.				Night.			
1837.	Days.	Barom.	Hygrometer.		Weather.	Barom.	Hygrometer.		Weather.	Barom.	Hygrometer.		Weather.
S.	1	29.933	15	15 —	Overcast	29.958	14	14 —	Slight Showers	30.000	14	14 —	Fine
M.	2	30.141	16.5	16.5 —	Slight Rain	30.154	21	17 4	Very Fine	—.160	21	21 —	Ditto
T.	3	—.167	14	14 —	Foggy	—.100	20.5	17 3.5	Cloudy	—.072	14	14 —	Rain
W.	4	—.020	17.5	17.5 —	Overcast	—.051	20.5	17 3.5	Fine	—.124	10	10 —	Clear & Cold
Th.	5	—.245	10.5	10.5 —	Foggy	—.250	17.5	14 3.5	Overcast	—.215	13	13 —	Clear
F.	6	—.078	15	15 —	Heavy Rain	—.079	17.5	14 3.5	Clear	—.130	11.5	11.5 —	Ditto
☽ S.	7	—.129	10	10 —	Foggy [Fine	—.236	17.5	13.5 4	Very Fine	—.247	11	11 —	Ditto
S.	8	—.199	13	13 —	Overcast and	—.197	15.5	15.5 —	Drizzly	—.252	10	10 —	Ditto
M.	9	—.308	9	9 —	Fine	—.312	14	10 4	Very Fine	—.318	6	6 —	Ditto & Cold
T.	10	—.353	9.5	9.5 —	Ditto	—.472	17	16 1	Ditto	—.358	12	12 —	Overcast
W.	11	—.395	12.5	12.5 —	Ditto	—.409	18	15 3	Ditto	—.431	8	8 —	Fine
Th.	12	—.461	8.5	8.5 —	Ditto	—.480	16.5	15 1.5	Ditto	—.535	10	10 —	Very Fine
⊙ F.	13	—.601	6.5	6.5 —	Clear	—.600	14	7 7	Ditto	—.631	7	6 1	Ditto
S.	14	—.713	6.5	6.5 —	Ditto	—.706	13	7 6	Do. & Clear	—.701	4	3 1	Ditto
S.	15	—.664	3.5	3.5 —	Slight Fog	—.624	13	8 5	Fine	—.576	7	6 1	Ditto
M.	16	—.507	7	7 —	Fine	—.449	13.5	8 5.5	Overcast	—.416	8	8 —	Ditto
T.	17	—.301	5.5	5.5 —	Foggy	—.226	14	12 2	Ditto & Fine	—.174	9	9 —	Overcast
W.	18	—.127	10.5	10.5 —	Fine	—.120	15	13 2	Overcast	—.233	13	13 —	Ditto
Th.	19	—.406	4	4 —	Foggy	—.415	15	10 5	Very Fine	—.444	7	7 —	Fine
F.	20	—.537	9.5	9.5 —	Overcast	—.545	15.5	11 4.5	Ditto	—.566	11	11 —	Overcast
☾ S.	21	—.652	9.5	9.5 —	Foggy	—.627	14	11 3	Overcast	—.068	6.5	6.5 —	Clear and Cold
S.	22	—.446	10	10 —	Overcast	—.418	14.5	14.5 —	Slight Rain	—.310	11	11 —	Rain
M.	23	—.047	10	10 —	Ditto	29.972	16	14 2	Fine	29.731	13	13 —	Ditto
T.	24	29.606	9.5	9.5 —	Ditto	—.536	11.5	11.5 —	Heavy rain	—.519	5	5 —	Clear
W.	25	.665	5	5 —	Overcast	—.810	8	8 —	Clearing	30.021	4	4 —	Ditto
Th.	26	30.072	2	2 —	Clear	30.007	11	8 3	Fine	29.837	10.5	10.5 —	Overcast
F.	27	29.528	12	12 —	Cloudy	29.523	11	11 —	Rain	—.655	4.5	4.5 —	Clear
S.	28	—.651	5	5 —	Fine	—.513	10.5	10.5 —	Ditto	—.307	7.5	7.5 —	Rain
● S.	29	—.470	2.5	2.5 —	Very Clear	—.478	8.5	5.5 3	Fine	—.424	7	7 —	Overcast
M.	30	—.403	8	8 —	Rain	—.287	15	15 —	Rain	—.355	7.5	7.5 —	Rain
T.	31	—.362	5	5 —	Overcast	—.412	10.5	5.5 5	Fine	—.530	3.5	3.5 —	Clear & Cold
Cent.		30.131	9.11	9.11 0.0		30.124	14.61	11.89 2.72		30.104	9.24	9.15 0.09	
Fah.			48.39	48.39 0.0			58.29	53.40 4.89			48.63	48.47 0.16	

OCTOBER.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	20.5	9	28.5	8	SW	Little		The weather during the first 3 weeks was very favourable for collecting the productions of the garden, many of which were retarded beyond their usual period of maturity, from the lateness of the spring, the rather low temperature of the summer, and the deficiency of sun heat in the two preceding months. Much rain fell between the 22nd and 31st. There were about 2°. of frost on the night of the 14th; and on that of the 25th, it was so severe as to spoil the flowers and blacken the foliage of the Dahlia.
2	23	8.5	32	8	——	Ditto	.03	
3	22	12.5	32	11	——	Ditto		
4	22	5.5	29.5	4	S	Ditto		
5	17.5	12.5	20.5	10	——	Ditto	.29	
6	19	4.5	28	2.5	W	Brisk	.09	
7	19	6	27	4	——	Little		
8	19	2.5	26	— 0.5	——	Ditto		
9	18	2.3	26	—0.5	——	Ditto		
10	17.5	8	26.5	7	S	Ditto		
11	19	4.5	26.5	3	——	Ditto		
12	17	2.3	26.5	—1	E	Ditto		
13	14	4.5	23	1	NE	Ditto		
14	14.2	—1	24.5	—4	——	Ditto		
15	14	1.5	22	—1.7	N	Ditto		
16	15	2	24.5	—1	W	Ditto		
17	15.5	7.5	21	5	SW	Ditto		
18	14.5	1.5	19.5	—1	——	Ditto	.04	
19	15.5	5	26	2	W	Ditto		
20	16	3.5	26	1	——	Ditto		
21	14.5	2.3	26	—0.5	SW	Ditto		
22	15	9.7	26	8.5	——	Ditto	.02	
23	16.5	8.5	26.5	8	——	Brisk	.36	
24	10	0	11	—3	S	Little	.30	
25	10.5	—2.7	14	—5.5	N	Ditto	.10	
26	12	4.5	16.5	2.5	SW	Ditto		
27	12	1.5	16	—1.5	——	Brisk	.09	
28	9.5	1	10.5	—1	S	Little	.49	
29	12.5	0	17.5	—2.4	SW	Brisk	.04	
30	15	4.5	17	3	——	Strong	.20	
31	13.5	3	16.5	0	W	Brisk	.34	
Cent	15.91	4.09	23.00	2.09			2.39	
Fah.	60.63	39.36	73.40	35.76				

Mean Pressure from the 3 daily observations 30.119 inches. Fahr.
—— Temperature.....Ditto..... 10°.98 or 51.76
—— Dew Point.....Ditto..... 10°.05 — 50.09
—— Degree of Dryness....Ditto..... 0°.93 — 1.67
—— Degree of Moisture...Ditto..... .945
—— Force of Vapour.....Ditto..... .401 inch.
Least observed degree of Moisture..... .655
Maximum Temperature in the Shade.... 23°.00 or 73.40
Minimum Temperature in ditto.....—2°.70 — 27.14
Maximum Temperature in the Sun..... 32°.00 — 89.60
Minimum of Terrestrial Radiation.....— 5°.50 — 22.10
Mean Temperature of External Air..... 10°.00 — 50.00

WINDS.

North	2 days.	N. East.....	2 days.
South	6 ..	S. East.....	0 ..
East.....	1 ..	N. West	0 ..
West.....	8 ..	S. West.....12	..

31 days.

Amount of Rain ..... 2.39 inches.

NOVEMBER.

		Morning.					Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	29.014	12	12	—	Heavy Rain	28.801	14	14	—	Stormy & Wet	29.060	5	5	—	Rain
Th.	2	—.142	5	5	—	Ditto	29.186	5.5	5.5	—	Boisterous	—.170	3	3	—	Overcast
F.	3	—.263	1.5	1.5	—	Overcast	—.317	8	5	3	Overcast	—.441	1.5	1.5	—	Clear, lightning
S.	4	—.705	2	2	—	Frosty	—.845	8	4	4	Clear & Fine	30.007	1.5	0.5	1	Cloudy& Cold
☽ S.	5	30.099	4	4	—	Overcast	30.094	9.5	8	1.5	Fine	—.185	4.5	4.5	—	Ditto
M.	6	—.336	2	2	—	Very Clear	—.370	7.5	4	3.5	Ditto	—.429	—1	—1	—	Slight Fog
T.	7	—.477	—2	—2	—	Frosty&Foggy	—.459	5.5	5.5	—	Clear & ditto	—.425	—0.5	—0.5	—	Frosty
W.	8	—.355	—2.5	—2.5	—	Ditto	—.298	—0.5	—0.5	—	Frosty and Foggy	—.247	—1	—1	—	Do. & Foggy
Th.	9	—.196	—4	—4	1.5	Ditto	—.119	5	5	—	Foggy	—.114	6.5	6.5	—	Drizzly
F.	10	—.011	7	7	0.5	Hazy	29.966	11	11	—	Drizzly	29.931	11.5	11.5	—	Fine
S.	11	29.961	7.5	7.5	—	Fine	—.968	9	7	2	Cloudy	—.986	7	7	—	Ditto
○ S.	12	30.020	5.5	4	—	Ditto	30.080	6	4	2	Fine	30.162	1	1	—	Clear
M.	13	—.162	2.5	2	—	Overcast	—.064	7	5	2	Overcast	29.796	6	6	—	Fine
T.	14	29.581	7	7	—	Fine	29.533	10	8	2	Cloudy	—.670	5	5	—	Rain
W.	15	—.959	1	1	—	Very Clear	30.031	6	2.5	3.5	Clear	30.074	0.5	0.5	—	Clear and Cold
Th.	16	30.041	1.5	1.5	—	Fine	—.007	4.5	1.5	3	Fine	29.957	—1.5	—1.5	—	Do. & Frosty
F.	17	—.013	—0.5	—0.5	—	Frosty	—.031	5	3.5	1.5	Ditto	30.093	0	0	—	Ditto
S.	18	—.180	—2.5	—2.5	—	Ditto	—.120	2.5	2.5	—	Hazy	—.084	5.5	5.5	—	Drizzly
S.	19	—.010	7	7	—	Overcast	29.978	11.5	10	1.5	Overcast	29.869	11	11	—	Rain
☾ M.	20	29.883	5	5	—	Fine	—.830	9	9	—	Clear	—.734	5.5	5.5	—	Ditto
T.	21	—.874	2	2	—	Ditto	—.867	9	7	2	Cloudy	30.029	6.5	6.5	—	Overcast
W.	22	—.935	10	10	—	Slight Rain	—.935	13	13	—	Slight Rain	29.894	12.5	12.5	—	Ditto
Th.	23	—.824	11	11	—	Densely Overcast	—.654	11	11	—	Drizzly	—.777	8	8	—	Drizzly
F.	24	—.962	6	6	—	Overcast	—.959	9	9	—	Overcast	30.006	6	6	—	Overcast
S.	25	30.190	1.5	1.5	—	Ditto	30.156	5	3	2	Clear	29.959	—1	—1	—	Frosty
S.	26	—.056	0	0	—	Frosty	29.783	6	6	—	Fine	—.578	6	6	—	Rain
M.	27	29.542	1.5	1.5	—	Clear	—.528	6.5	4	2.5	Very Fine	—.438	5.5	5.5	—	Fine
● T.	28	—.323	4	4	—	Fine	—.263	7	7	—	Cloudy	—.215	4	4	—	Rain
W.	29	—.513	—0.5	—0 5	—	Clear & Frosty	—.614	4	1	3	Clear	—.767	—1	—1	—	Frosty
Th.	30	—.738	3	3	—	Hazy	—.676	10	10	—	Rain	—.609	10	10	—	Rain
Cent.		29.878	3.25	3.19	0.06		29.851	7.48	6.18	1.30		29.856	4.25	4.22	0.03	
Fah.			37.85	37.74	0.11			45.46	43.12	2.34			39.65	39.59	0.05	

NOVEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	13	3·5	13·5	2·5	SW	Strong	.12	The mean temperature was 3° below the average. The nights were very frequently frosty; the lowest temperature occurred on the night of the 8th, when the thermometer indicated 10° below freezing. The 1st and 2nd were boisterous with showers. The quantity of rain was below the average. On the whole the weather was favourable for the operations of the garden.
2	10	—0.5	11	—3	W	Ditto	.05	
3	9	—2	15	—4·5	——	Little	.02	
4	10	—2.5	13 5	—4·7	NW	Ditto		
5	9·5	—2.5	16.5	—5	——	Ditto		
6	9	—4	15·5	—8	N	Ditto		
7	7	—5	14	—9	S	Ditto		
8	0.5	—5·5	2	—7·5	N	Ditto		
9	7·5	—0.5	7·5	—1	NW	Ditto	.03	
10	11·5	7	11 5	4·5	SW	Ditto		
11	10	4	16	1	NW	Strong		
12	7·7	—0.5	13·5	—2·5	W	Brisk		
13	9	5	13·5	5	——	Little	.30	
14	8.5	1	10	—1·5	——	Ditto	.07	
15	7	—1·5	12.5	—5	NE	Brisk		
16	5·2	—5·5	11·5	—9·5	——	Little		
17	5·5	—5	10.5	—8.5	N	Ditto		
18	10.5	2.5	14	2	S	Ditto	.01	
19	11	4.5	13·5	2	SW	Brisk	.22	
20	11	0	14	—3·5	W	Ditto	.01	
21	11	2	14.5	—1·5	——	Strong	.04	
22	12.5	10.5	12.7	10.5	SW	Brisk	.01	
23	12 5	5.5	12.5	4	W	Ditto	.13	
24	8.5	1	11	—2.5	NE	Little		
25	6	—4.5	11.5	—9	——	Ditto		
26	8.5	0.5	12	—2	SW	Brisk	.25	
27	8.5	3.5	11	1.5	W	Little		
28	6.5	—1	10.5	—4	NW	Ditto		
29	7·7	—4.5	10.5	—9	N	Ditto		
30	11	4	11	1.5	SW	Ditto	.06	
Cent	8.83	0.31	12.21	—2.20			1.32	
Fah.	47.89	0.55	53·97	28.04				

Mean Pressure from the 3 daily observations 29.861 inches. Fahr.
—— Temperature.....Ditto..... 4°.99 or 40.98
—— Dew Point.....Ditto..... 4°.53 — 40.15
—— Degree of Dryness.....Ditto..... 0°.46 — 0.83
—— Degree of Moisture.....Ditto..... .965
—— Force of Vapour.....Ditto..... .281 inch.
Least observed degree of Moisture..... .766
Maximum Temperature in the Shade..... 13°.00 or 55.40
Minimum Temperature in ditto..... .—5°.50 — 22.10
Maximum Temperature in the Sun..... 16°.50 — 61.70
Minimum of Terrestrial Radiation.....—9°.50 — 14.90
Mean Temperature of External Air..... 4°.57 — 40.22

WINDS.

North.....4 days	N. East.....4 days
South .....2 ..	S. East.....0 ..
East .....0 ..	N. West.....5 ..
West .....9 ..	S. West..... 6 ..

30 days.

Amount of Rain.....1.32 inches.

DECEMBER.

		Morning.					Noon.					Night.				
1837.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
F.	1	29.867	4	4	—	Clear	29.983	8	7	1	Very Fine	30·131	0	0	—	Frosty
S.	2	30.279	—1.5	—1.5	—	Frosty&Foggy	30.301	3	3	—	Foggy	—.329	0	0	—	Dense Fog
S.	3	—.442	2.5	2.5	—	Foggy	—.446	5	5	—	Ditto	—.424	1.5	1.5	—	Ditto
☽ M.	4	—.534	—2.5	—2.5	—	Dense Fog	—.510	—2	—2	—	De ıse Fog	—.464	—2	—2	—	Hazy
T.	5	—.404	2.5	2.5	—	Foggy	—.341	2.5	2.5	—	Foggy	—.228	3	3	—	Overcast
W.	6	—.167	2	0	2	Overcast	—.089	2	2	—	Cloudy & Cold	29.946	0	0	—	Snowing
Th.	7	29.835	0.5	0.5	—	Sleet	29.806	1.5	1.5	—	Drizzly, Foggy	—.749	1.5	1.5	—	Hazy
F.	8	—.690	0	0	—	Foggy	—.656	3	3	—	Showery	— 662	1	1	—	Ditto
S.	9	—.710	1	1	—	Ditto	—.754	2	2	—	Hazy	—.838	2.5	2.5	—	Showery
S.	10	30.053	1.5	1.5	—	Hazy	30.048	4	3	1	Very Fine	30.102	3	3	—	Fine
M.	11	—.151	2	1	1	Fine	—.130	3	0	3	Overcast	—.113	2	2	—	Ditto
○ T.	12	—.079	0	—1	1	Ditto	29.957	2	0	2	Clear	29.954	2	2	—	Slight Rain
W.	13	—.088	0	0	—	Ditto	30.103	5.5	4	1.5	Fine	30.191	2.5	2.5	—	Fine
Th.	14	—.284	—2	—2	—	Frosty	—.259	5	3	2	Very Fine	—.194	4	4	—	Ditto
F.	15	—.180	1	1	—	Fine	—.110	4	3	1	Fine	—.115	4	4	—	Ditto
S.	16	29.906	0	0	—	Ditto	29.838	7	6	1	Ditto	29.789	7	7	—	Rain
S.	17	—.821	7.5	7.5	—	Rain	—.674	9	9	—	Rain	—.610	7.5	7.5	—	Ditto
M.	18	—.373	10	10	—	Ditto	—.398	11	11	—	Stormy & Wet	—.571	10.5	10.5	—	Boisterous
T.	19	—.955	5.5	4.5	1	Very Clear	— 961	10.5	9	1.5	Overcast	—.697	11.5	11.5	—	Rain
☾ W.	20	—.603	11.5	11.5	—	Rain	—.350	12.5	12.5	—	Boisterous, Rain	—.273	6	6	—	Boisterous
Th.	21	—.959	5	4	1	Cloudy	30.119	7.5	3	4.5	Very Fine	30.232	4.5	4.5	—	Fine
F.	22	30.124	6	6	—	Overcast	—.026	8.5	8.5	—	Drizzly	29.862	10	10	—	Ditto
S.	23	29.855	8.5	8.5	—	Fine	29 957	10	9	1	Light Haze	—.946	6.5	6.5	—	Overcast
S.	24	30.019	7	7	—	Hazy	—.766	11	11	—	Hazy	—.784	9.5	9.5	—	Fine
M.	25	29.798	11	11	—	Cloudy & Fine	—.813	12	11	1	Very Fine	— 963	6	6	—	Ditto
T.	26	—.952	8.5	8.5	—	Drizzly	—.903	10	10	—	Hazy	—.761	7.5	7.5	—	Ditto
● W.	27	—.803	6.5	6.5	—	Foggy	—.819	9	9	—	Ditto	—.823	8.5	8.5	—	Ditto
Th.	28	—.794	8.5	8.5	—	Overcast	—.904	10	9	1	Cloudy & Fine	—.863	9	9	—	Overcast & Do.
F.	29	—.852	7	7	—	Fine	—.846	10	8	2	Very Fine	—.846	7	7	—	Fine
S.	30	—.965	9	8	1	Very Fine	—.951	11	11	—	Ditto	—.903	9	9	—	Ditto
S.	31	30.014	5	5	—	Fine	—.985	9.5	8	1.5	Fine	—.980	6.5	6.5	—	Ditto
Cent.		29.985	3.57	3.35	0.22		29.961	6.68	5.88	0.80		29.946	5.21	5.21	0.0	
Fah.			38.42	38.03	0.39			44.02	42.58	1.44			41.37	41.37	0.0	

DECEMBER.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.
1	10	—3	15.5	—6	W	Little		
2	4.7	—2.5	7.5	—6	SW	Ditto		
3	4	—4.5	4.5	—9	E	Ditto		
4	3	—2	3	—6	S	Ditto		
5	3.5	2.3	4	—1.5	NE	Ditto		
6	2.5	—1	3.5	—2	——	Brisk		.08
7	2	—1	7.5	—2	——	Little		.15
8	5	—1	7.5	—2.5	S	Ditto		.01
9	5.5	0	10.5	—1.5	N	Ditto		.01
10	5	1.5	10.5	1	NE	Ditto		
11	3.5	—1.5	4.5	—4	——	Ditto		
12	5	—3.5	7	—6	W	Ditto		.02
13	6.5	—3	11	—6.5	NW	Ditto		
14	6.5	0.5	11	—3	S	Ditto		
15	6.5	—2.5	7	—5.5	——	Ditto		
16	10	6	12	4	——	Ditto		.12
17	11	8	11	7.5	——	Brisk		.37
18	12	5.5	12	3	SW	Strong		.11
19	12.5	7	13	5.5	——	Little		.38
20	12	4.5	12.5	4	——	Strong		.10
21	7.5	3.5	10	2.5	NE	Little		
22	11	7.7	11.5	7	SW	Ditto		
23	10	5.7	11.5	4.5	——	Ditto		
24	11	9	11.5	9	W	Ditto		
25	12.5	2.7	14	1	——	Brisk		
26	9.5	5.5	10	5.5	S	Little		
27	9.5	6.5	10	6	SE	Ditto		
28	10	6.3	11.5	4.5	S	Ditto		
29	10.5	7	13.5	4.5	SE	Ditto		
30	10.5	3.6	11.5	1	SW	Ditto		
31	10	4	14	1	——	Brisk		
Cent	8.12	2.30	9.80	0.32				1.35
Fah.	46.61	36.14	49.64	32.58				

Remarks.

The mean temperature of this month was higher than that of the preceding. Some frosts were experienced in the first fortnight; but the remainder was exceedingly mild for the season. On the 25th, the warmest day in the month, the thermometer was at nearly 55° in the shade. After the 20th there was neither frost nor rain. The temperature at night averaged $2\frac{1}{2}$° above that of the nights of April, and were only about as many below that of May, in the present season. The winter crops were, at the conclusion of the year, in a very high state of vegetation.

Mean Pressure from the 3 daily observations	29.964 inches	.Fahr.
—— Ten perature .....Ditto.....	5°.15	41.27
—— Dew Point .....Ditto.....	4°.81	40.66
—— Degree of Dryness .....Ditto.....	0°.34	0.61
—— Degree of Moisture .....Ditto.....	.972	
—— Force of Vapour.....Ditto.....	.287 inch.	
Least observed degree of Moisture	.751	
Maximum Temperature in the Shade.....	12.50	54.50
Minimum Temperature in ditto.....	—4.50	23.90
Maximum Temperature in the Sun.....	15.50	59.90
Minimum of Terrestrial Radiation.....	—9.00	15.80
Mean Temperature of External Air.....	5.21	41.38

WINDS.

North .....1 days	N. East .....6 days
South .....8 ..	S. East .....2 .
East .....1 ..	N. West .....1 ..
West .....4 ..	S. West .....8 ..

31 days.

Amount of Rain .....1.35 inch.

Monthly Mean Pressure, Temperature, and Dew Point, &c. of 1837; deduced from the Observations recorded in the preceding Journal.

1837. Months.	Pressure.								Temperature.											
	Max.	Min.	Med.	Range of Barom.	Mean at Morn.	Mean at Noon.	Mean at Night.	Mean of the three Observations.	In the Shade. Max.	In the Shade. Min.	In the Shade. Med.	Mean at Morn.	Mean at Noon.	Mean at Night.	Mean of the three Observs	In Sun's Rays. Max.	In Sun's Rays. Min.	Terrestrial Radiation Max.	Terrestrial Radiation Min.	Med. of Sun and Radn.
Jan. .	30.585	29.344	29.962	1.241	29.973	29.935	29.961	29.956	10.50	—11.00	3.66	2.40	4.90	3.05	3.45	11.00	1.5	7.0	—13.7	3.87
Feb. .	30.487	29.162	29.969	1.325	29.982	29.967	29.958	29.969	13.00	—3.00	5.11	3.76	7.64	3.51	4.97	14.5	4.5	7.5	— 8.0	4.26
March	30.431	29.301	29.979	1.130	29.996	29.981	29.960	29.979	9.70	—7.00	3.30	2.11	5.77	1.48	3.12	16.5	1.0	2.0	—12.2	3.65
April	30.376	29.424	29.821	0.952	29.821	29.808	29.803	29.811	17.50	—5.00	5.53	5.28	8.45	3.18	5.64	21.5	9.0	8.0	—10.0	6.20
May .	30.361	29.636	29.957	0.725	29.971	29.957	29.944	29.957	23.50	—1.00	9.79	9.72	14.58	6.74	10.35	31.5	13	9.5	— 5.0	11.96
June.	30.361	29.564	30.008	0.797	30.021	30.011	29.995	30.009	27.00	2.00	15.60	16.43	21.48	13.23	17.04	38.0	20	13.0	— 1.5	17.84
July .	30.332	29.293	29.968	1.039	29.994	29.963	29.949	29.969	29.50	3.00	17.31	17.69	23.01	15.54	18.74	40.0	21	15.5	— 0.5	19.93
Aug.	30.460	29.388	30.002	1.072	30.018	30.005	29.985	30.002	30.50	4.00	16.96	16.56	21.58	15.63	17.92	45.5	22	17.5	1.5	19.67
Sept.	30.313	29.071	29.895	1.242	29.893	29.895	29.895	29.894	22.50	1.70	13.16	13.43	17.76	11.70	14.29	33.0	20	14.4	— 1.5	16.47
Oct. .	30.713	29.287	30.121	1.426	30.131	30.124	30.104	30.119	23.00	—2.70	10.00	9.11	14.61	9.24	10.98	32.0	10.5	11.0	— 5.5	12.54
Nov..	30.477	28.801	29.861	1.676	29.878	29.851	29.856	29.861	13.00	—5.50	4.57	3.25	7.48	4.25	4.99	16.5	2.0	10.5	— 9.5	5.00
Dec. .	30.534	29.273	29.966	1.261	29.985	29.961	29.946	29.964	12.50	—4.50	5.21	3.57	6.68	5.21	5.15	15.5	3.0	9.0	— 9.0	5.06
Aver.	30.452	29.295	29.958	1.157	29.972	29.954	29.946	29.957	19.35	—1.58	9.18	8.61	12.82	7.73	9.72	26.29	10.62	0.40	— 6.24	10 53

1837. Months.	Hygrometer indicating Dew Point.								Scale of the Winds.									Rain.
	Mean Dew Point at Morn.	Mean Dew Point at Noon.	Mean Dew Point at Night.	Mean Dew Point.	Mean Force of Vapour.	Mean degree of Dryness.	Mean degree of Moisture.	Least degree of Moisture.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Days.	In. Pts.
Jan. .	2.38	4.66	3.05	3.36	.264	0.09	995	842	4	2	3	1	7	8	5	1	31	3.03
Feb. .	3.67	5.73	3.51	4.30	.277	0.67	955	578	2	1	1	3	8	8	4	1	28	2.01
March	1.24	1.13	1.24	1.20	.233	1.92	896	393	5	12	1	1	1	5	2	4	31	0.54
April	3.52	2.24	2.43	2.73	.255	2.91	836	289	5	9	2	0	6	3	4	1	30	1.13
May .	8.30	7.52	6.08	7.30	.341	3.05	833	425	7	6	2	1	5	5	3	2	31	1.07
June.	14.08	14.45	12.55	13.69	.502	3.35	827	300	0	5	5	2	6	2	2	8	30	1.31
July .	15.65	15.33	14.87	15.28	.551	3.46	849	273	1	1	5	2	2	8	7	5	31	1.78
Aug.	15.64	17.45	15.42	16.17	.578	1.75	901	488	1	7	3	2	7	7	2	2	31	3.04
Sept.	12.78	14.06	11.56	12.80	.476	1.49	915	576	3	4	6	3	6	5	2	1	30	0.91
Oct.	9.11	11.89	9.15	10.05	.401	0.93	945	655	2	2	1	0	6	12	8	0	31	2.39
Nov.	3.19	6.18	4.22	4.53	.281	0.46	965	766	4	4	0	0	2	6	9	5	30	1.32
Dec. .	3.35	5.88	5.21	4.81	.287	0.34	972	751	1	6	1	2	8	8	4	1	31	1.35
Aver.	7.74	8.87	7.44	8.02	.370	1.70	907	528	35	59	30	17	64	67	52	31	365	19.88

The preceding Table, as regards Temperature, and the Dew Point, is in terms of the Centigrade Thermometer ; the following is a reduction of the same to Fahrenheit's scale.

1837.	Temperature.												Hygrometer indicating Dew Point.				
	In the Shade			Mean at			Mean of the three Observa-vations.	In Sun's Rays.		Terrestrial Radiation.		Med. of Sun and Radia-tion.	Mean Dew Point at			Mean Dew Point.	Mean degree of Dryness.
Months.	Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.		Morn.	Noon.	Night.		
Jan. .	50.9	12.2	38.50	36.3	40.8	37.5	38.2	51.8	34.7	44.6	7.3	38.96	36.2	40.3	37.5	38.0	0.17
Feb. .	55.4	26.6	41.20	38.7	45.7	38.3	40.9	58.1	40.1	45.5	17.6	39.68	38.5	42.3	38.3	39.7	1.20
March	49.4	19.4	37.94	35.8	42.3	34.6	37.6	61.7	33.8	35.6	10.0	38.58	34.2	34.0	34.2	34.1	3.45
April	63.5	23.0	41.95	41.5	47.2	37.7	42.1	70.4	48.2	46.4	14.0	43.16	38.3	36.0	36.3	36.9	5.24
May .	74.3	30.2	49.62	49.4	58.2	44.1	50.6	88.7	55.4	49.1	23.0	53.44	46.9	45.5	42.9	45.1	5.49
June.	80.6	35.6	60.08	61.5	70.6	55.8	62.6	100.4	68.0	55.4	29.3	64.12	57.3	58.0	54.6	56.6	6.03
July .	85.1	37.4	63.16	63.8	73.4	59.9	65.7	104.0	69.8	59.9	31.1	67.87	60.1	59.6	58.7	59.5	6.23
Aug.	86.9	39.2	62.53	61.8	70.8	60.1	64.2	113.9	71.6	63.5	34.7	67.41	60.1	63.4	59.7	61.1	3.15
Sept.	72.5	35.0	55.68	56.1	63.9	53.0	57.7	91.4	68.0	51.9	29.3	61.64	55.0	57.3	52.8	55.0	2.68
Oct. .	73.4	27.1	50.00	48.4	58.3	48.6	51.7	89.6	50.9	51.8	22.1	54.58	48.4	53.4	48.4	50.0	1.67
Nov .	55.4	22.1	40.22	37.8	45.4	39.6	40.9	61.7	35.6	50.9	14.9	41.00	37.7	43.1	39.6	40.1	0.83
Dec. .	54.5	23.9	41.38	38.4	44.0	41.3	41.2	59.9	37.4	48.2	15.8	41.11	38.0	42.5	41.3	40.6	0.61
Aver.	66.83	27.67	48.52	47.49	55.07	45.91	49.49	79.32	51.12	50.73	20.76	50.96	45.92	47.96	45.39	46.42	3.06

XXXIV. *On the Propagation of Trees by Cuttings in Summer.*

By Thomas Andrew Knight, *Esq.* F.R.S., *President.*

Read April 3, 1838.

When a cutting of any deciduous tree is planted in Autumn, or Winter, or Spring, it contains within it a portion of the true, as it has been called, or vital sap of the tree of which it once formed a part. This fluid, relatively to plants, is very closely analogous to the arterial blood of animals; and I shall therefore, to distinguish it from the watery fluid, which rises abundantly through the alburnum, call it the *arterial sap* of the tree. Cuttings of some species of trees very freely emit roots and leaves; whilst others usually produce a few leaves only and then die; and others scarcely exhibit any signs of life: but no cutting ever possesses the power of regenerating, and adding to itself vitally, a single particle of matter, till it has acquired mature and efficient foliage. A part of the arterial sap previously in the cutting, assumes an organic solid form; and the cutting in consequence, necessarily becomes, to some extent, exhausted.

Summer cuttings possess the advantage of having mature and efficient foliage, but such foliage is easily injured or destroyed, and if it be not carefully and skilfully managed, it dies. These cuttings (such as I have usually seen employed) have some mature and efficient foliage and other foliage, which is young and growing, and consequently two distinct processes are going on at the same time within them, which operate in opposition to each other. By the mature leaves, carbon, under the influence of light, is taken up from the surrounding atmosphere, and arterial sap is generated. The

young and immature leaves, on the contrary, vitiate the air in which they grow by throwing off carbon; and they expend, in adding to their own bulk, that which ought to be expended in the creation of shoots. This circumstance respecting the different operations of immature and mature leaves upon the surrounding air, presented itself to the early labourers in pneumatic chemistry. Dr. PRIESTLY noticed the discharge of oxygen gas, or dephlogisticated air, (as it was then called,) from mature leaves; SCHEELE making, as he supposed, a similar experiment upon the young leaves of germinating beans, found these to vitiate air in which they grew. These results were then supposed to be widely at variance with each other; but subsequent experience has proved both philosophers to have been equally correct.

I possess many young seedling trees of the Ulmus campestris, or suberosa, or glabra, for the widely varying characters of my seedling trees satisfy me that these three supposed species are varieties only of a single species. One of these seedling plants presented a form of growth, which induced me to wish to propagate from it. It shews a strong disposition to aspire to a very great height with a single straight stem, and with only very small lateral branches, and to be therefore calculated to afford sound timber of great length and bulk, which is peculiarly valuable, and difficult to be obtained, for the keels of large ships; and the original tree is growing with very great rapidity in a poor soil and cold climate.

The stem of this tree, near the ground, presented, in July, many very slender shoots about three inches long. These were then pulled off and reduced to about an inch in length, with a single mature leaf upon the upper end of each, and the cuttings were then planted so deeply in the soil, that the buds at the bases of the leaves were but just visible above the surface of the soil. The cuttings were then covered with bell glasses in pots, and put upon the flue of a hothouse, and subjected to a temperature of about 80°. Water was very abundantly given; but the under surfaces of the

leaves were not wetted. These were in the slightest degree faded, though they were fully exposed to the sun; and roots were emitted in about fifteen days. I subjected a few cuttings, taken from the bearing branches of a Mulberry tree, to the same mode of management, and with the same result; and I think it extremely probable, that the different varieties of Camellia, and trees of almost every species, exclusive of the Fir tribe, might be propagated with perfect success and facility by the same means.

Evergreen trees, of some species, possess the power of ripening their fruit during Winter. The common Ivy and the Loquat, are well known examples of this; and this circumstance, combined with many others, led me to infer that the leaves of such trees possess in a second year the same, or nearly the same power, as in the first. I therefore planted, about a month ago, some cuttings of the old double blossomed white and Warratah Camellia, having reduced the wood to little more than half an inch in length, and cut it off obliquely, so as to present a long surface of it; and I reduced it further by paring it very thin, at and near to its lower extremities. The leaves continue to look perfectly fresh; and the buds in more than one instance have produced shoots of more than an inch in length, and apparently possessing perfect health and much vigour. Water has been very abundantly given; because I conceived that the flow of arterial sap from the leaf would be so great, comparatively with the quantity of the bark and alburnum of the cuttings, as to preclude the possibility of the rotting of these.

The cuttings above described present, in the organization, a considerable resemblance to seedling treesat different periods, of the growth of the latter. The bud very closely resembles the plumule; and the leaf, the cotyledon, extended into a seed leaf; and the organ, which has been, and is called, a radicle, is certainly a caudex, and not a root. It is capable of being made to extend, in some cases, to more than two hundred times its first length, between two articulations, a power which is not possessed in any degree by

the roots of trees. Whether the caudex of the cuttings of Camellia, above mentioned, have emitted or will, or will not, emit roots, I am not yet prepared to decide; but I entertain very confident hopes of success.

XXXV. *Notes on the Cultivation of Chlidanthus fragrans. In a letter to the Secretary; by The Rev.* F. Belfield, *F. H. S.*

Read September 5, 1837.

Having been very successful in flowering Chlidanthus fragrans, this spring, and that too under three different modes of treatment; it has occurred to me that you might like to be made acquainted with it.

In December last, my friend Mr. Nugent, gave me, for the purpose of trying experiments, nine middle sized roots, which for the two preceding years had been growing in the open ground, protected only by a frame in winter. On receiving them, they were put into dry earth and placed in the hottest part of the stove and kept perfectly dry, till the latter end of the month of March, when three roots were potted, watered, and kept in the hothouse, of these two very shortly shewed their blossom buds, but only one came to perfection, and did not seed.

In the end of April the six remaining roots were planted in front of the Pine pit, and in the following month three of them flowered in the greatest perfection but did not shew any disposition to form a seed pod.

In the same border, I have another bulb, which has been growing there two years, quite unprotected in winter. This in the month of June surprised me by not only throwing up a noble flowering stem, far exceeding any of the others, but also by perfecting its seed pod, and that without any artificial impregnation. As this may be a novelty, I have much pleasure in sending it to you, possibly its produce may be even hardier than the parent bulb.

The border in which these plants have grown is particularly calculated for the culture of tender bulbs. Brunsvigia Josephinæ flowered there last autumn, with a stem nearly as large as my wrist, and a head of thirty-six flowers, seeding abundantly. Ismene calathina, Vallota purpurea, and many others flower annually, Hæmanthus toxicarius flourishes there, but has not blossomed.

Primley Hill, near Newton Abbot, Devonshire.
August 1, 1837.

XXXVI. *Note upon a newly introduced Half-hardy species of Salvia, called Salvia patens. By* George Bentham, *Esq. Secretary.*

The richness and variety of colouring observable in the numerous species of Salvia, which adorn the mountains of South America and Mexico, have long been known to botanists, but it has happened that few of them have hitherto found their way into our gardens. The S. splendens, fulgens, Grahami, and mexicana, occupy, it is true, the place in our collections they so well deserve, and some few others of considerable beauty, such as S. leucantha, leonuroides, angustifolia, &c. are to be met with occasionally in botanical gardens; but a single glance at the accompanying plate, in which it has been found scarcely possible to do full justice to the colouring of the original, will show how much superior this new importation is to its older congeners. It will, therefore, excite some surprise, that this plant, growing plentifully in the same districts from whence we have received the S. fulgens, should never till now have been transmitted to this country, and it will be readily believed that there are yet many which would amply reward the exertions of future collectors. We know for instance of a Salvia longiflora among the Peruvian mountains, with a corolla above five inches long, a S. speciosa in the same country with long dense spikes of a rich purple, a white flowered S. leucocephala, said far to exceed the beauty of S. leucantha, and in the Mexican mining districts the S. Regla, Sessei, and pubescens, with their inflated scarlet calyxes, S. phœnicea, covered with a profusion of flowers of the same colour, are stated to be fully equal to the S. fulgens in their general appearance, and even in South Brazil it is probable that

Drawn by Miss Drake

Salvia patens.

S. persicifolia, or some others allied to it, may fairly enter into competition with S. splendens. Others are known to have orange or yellow flowers of different shades. Indeed out of near two hundred species of American Salvias, there seems reason to believe that three-fourths of them may be worthy of cultivation.

We may hope, however, that in the S. patens, we have now secured one of the most desirable of the group, more especially as there seems reason to believe that it is not more tender than S. fulgens. It comes from the same mining districts of Guanaxuato, Real del Monte, Tlalpuxahua, &c. It was there first discovered by Nee, a Spanish botanist, who gave it the name of S. grandiflora, but that name having been pre-occupied, Cavanilles published it from Nee's dried specimens and coloured figure, under the name of S. patens. Humboldt and Bonpland again brought dried specimens to Europe; and Kunth, not aware of Cavanilles' figure, called it in his Nova Genera, S. spectabilis, for which he afterwards in his Synopsis substituted Cavanilles' name, since adopted by botanists.

The Salvia patens is a perennial, growing to the height of two, three, or four feet, erect and hairy. The leaves are large, ovate, or deltoid, broadly hastate, or somewhat heart-shaped at the base, or the upper ones rounded, green and hairy on both sides. The flowers are disposed in long terminal racemes, usually branching into three at the base; along this raceme they are placed in opposite pairs, each one at the axilla of a small linear-lanceolate floral leaf. The flower-stalks are short, the calyx half to three-quarters of an inch long, hairy, green, and deeply divided into two lips, the upper one entire, the lower deeply two-cleft. The corolla of a rich blue, between two and three inches long, is remarkable for its broad gaping mouth; the upper lip being long, falcate, and erect, enclosing the stamens and pistil, the lower lip hanging, with two lateral oblong reflexed lobes, and the middle one very broad and emarginate.

The S. patens will probably thrive best under the same treatment as that which succeeds with S. fulgens, and like that plant it will be found to vary much in the size, the brilliancy, and the number of flowers, according to the temperature and light in which it is grown. Particular care should be taken not to weaken the plant or suffer it to become etiolated, in order that the raceme may not lengthen too much and increase the distance between the flowers.

We owe this splendid addition to our gardens to the exertions of John Parkinson, Esq., Her Majesty's Consul at Mexico, who transmitted seeds to this country, early in the present year; and it was raised and first flowered in August last, by Mr. W. B. Page, nurseryman, at Southampton, by whom the beautiful specimen represented in the accompanying plate was sent to the Society. It has also been raised by Messrs. Lowe, nurserymen, of Clapton, and by Mr. Pontey, nurseryman, at Plymouth.

The following are the botanical characters of this species:

Salvia (Calosphace) *patens* (Cav. Ic. 5. p. 33. t. 454) caule herbaceo erecto piloso, foliis petiolatis ovato-deltoideis crenatis basi hastatis vel supremis rotundatis utrinque hispidis, floralibus lanceolato-linearibus, verticillastris bifloris remotis, calycibus campanulatis villosis, labio superiore brevissime tricuspidato, inferioris laciniis acuminatis, corollâ amplâ, fauce hiante, labio superiore erecto-falcato integro, inferiore dependente lobis lateralibus oblongis reflexis, intermedio latissimo emarginato.

XXXVII. *Observations upon the Effects produced on Plants by the Frost which occurred in England in the Winter of* 1837-8. *By* John Lindley, *Ph. D. F. R. S. &c. &c. Vice Secretary.*

Read December 4, 1838.

The winter of 1837-8 was in England more injurious to vegetation than any which has occurred in modern times, and it must be many years before its disastrous effects can be repaired under the most favourable circumstances. We may have had winters in which the temperature was as low, and the duration of severe weather longer, but on this occasion several concurrent circumstances contributed to mark the effects of the season more distinctly. At no previous time in the history of English gardening have there been so many rare exotics exposed to the naked influence of the climate; for the mildness of several previous winters, and the general increase of a desire to introduce new plants, had filled our gardens with species before unseen except in greenhouses.

Not only were all the common annual vegetables cultivated in kitchen gardens entirely destroyed, in the colder parts of the country, but strawberry plants prepared for forcing were so much injured as to be incapable of producing their flowers, and the vine was in many cases killed in greenhouses, in which a fire was not lighted. Among our native trees, the yew was affected in Cambridgeshire, and much more so at Glasgow; Ruscus aculeatus was injured in its native woods in Kent; the ivy lost its leaves and common thyme and broom were killed near London; the furze perished wholly above ground not only all round London, but even in South Wales, Cornwall and Devonshire; Atriplex Halimus lost its branches in Cambridgeshire; many of the hardy heaths were killed

to the ground; and the common periwinkle was observed by Mr. DILLWYN to lose its leaves at Sketty in South Wales. Even at the latter place, where the climate is comparatively mild, Menziesia polifolia was destroyed; Erica vagans, with its varieties was much injured at Woburn; and the common holly was extensively affected in several places in the middle and north of England; this plant however offered very different powers of resisting cold, some of the varieties proving much hardier than others, and, according to the observations of Mr. M^{c} INTOSH, those which are variegated, more so than the plain kinds. Of numerous exotic trees and shrubs from the South of Europe, New Holland, the Himalaya mountains, China, and the alpine regions of South America, many of which had been growing for years unharmed, a large proportion perished. Nearly all the rare specimens of this kind which had been collected, with so much care and cost, in the Society's Garden were destroyed. All round London fine old evergreen oaks, and cork trees had their leaves and young shoots turned brown, laurustinuses, sweet bays, and the common Arbutus were generally cut off, while in most gardens not a plant remained alive above ground of all the beautiful varieties of the China rose and its kindred species.

These and similar facts have induced me to investigate the extent of the mischief produced throughout the country in different situations; and by the kindness of those gentlemen to whom I applied for such evidence as came within their knowledge, I have been enabled to assemble a considerable amount of interesting information. My thanks are in particular due to

The Rev. FREDERICK BEADON, North Stoneham, Hampshire.

Mr. WILLIAM BEATTIE BOOTH, Gardener to Sir CHARLES LEMON Bart. M. P., Carclew, near Penryn, Cornwall.

PHILIP DAVIES COOKE, Esq., Owston, near Doncaster, Yorkshire.

LEWIS WESTON DILLWYN, Esq., Sketty, near Swansea.

Mr. JAMES FORBES, Gardener to His Grace the DUKE of BEDFORD, Woburn Abbey, Bedfordshire.

Mr. PHILIP FROST, Gardener to Lady GRENVILLE, Dropmore.

The Rev. Professor HENSLOW, Cambridge.

The Hon. and Rev. WILLIAM HERBERT, Spofforth, near Wetherby, Yorkshire.

Mr. STEPHEN HOOKER, Nurseryman, Brenchley, Kent.

Mr. GEORGE LESLIE, Gardener to JOHN FLEMING, Esq., Stoneham Park, Southampton.

Mr. JAMES TOWNSHEND MACKAY, Trinity College, Dublin.

Mr. FREDERICK MACKIE, Nurseryman, Norwich.

Mr. CHARLES M^{c} INTOSH, Gardener to H. M. the KING of the BELGIANS, Claremont.

Sir CHARLES MILES LAMBERT MONCK, Bart., Belsay Castle, Northumberland.

Sir OSWALD MOSLEY, Bart., Rolleston Hall, Burton upon Trent, Staffordshire.

Lieut. Gen. HENRY MONCKTON, Somerford Hall, near Wolverhampton.

Mr. STEWART MURRAY, Curator of the Botanic Garden, Glasgow.

Mr. NINIAN NIVEN, Curator of the Glasnevin Botanic Garden, Dublin.

JOHN P. PARKIN, Esq., Honorary Secretary to the Royal Horticultural Society of Cornwall.

JOHN ROGERS, Esq. Jun., Sevenoaks, Kent.

The Hon. W. F. STRANGWAYS, Abbotsbury, Dorchester.

JOHN HENRY VIVIAN, Esq. M.P., Singleton, Swansea, Glamorganshire.

JOSEPH WALKER, Esq., Calderstone, near Liverpool.

WILLIAM WELLS, Esq., Redleaf, Tonbridge, Kent.

JOHN WILLIAMS, Esq., Pitmaston, near Worcester.

Mr. JOHN WILSON, Gardener to the EARL of SURREY, Worksop Manor, Nottinghamshire.

Mr ROBERT WILSON, Gardener to His Grace The DUKE of NORFOLK, Arundel Castle, Sussex.

I have also occasionally availed myself of such published accounts as have appeared most worthy of notice.

In order that the conclusions to be drawn from the facts hereafter noticed should possess their proper value, it is necessary in the first place to explain the state of the weather, previously to the occurrence of the frost itself, and during its continuance. For this purpose the observations made in the garden of the Society by Mr. Thompson, and a few derived from other sources, will convey a sufficiently correct idea for the principal part of England.

The month of April, 1837, was perhaps the coldest and at the same time the most sunless ever remembered. It was 7° Fahr. below the mean of the same month for 10 preceding years; and the temperature of May following was 6° below the average. In the latter month, the appearance of vegetation was like what it generally presents a month earlier; the common hawthorn, for instance, was not farther advanced in leaf on the first of May, in the past season, than it generally is on the first of April. The general temperature of April and May being thus low, and the nights frequently frosty throughout both months, vegetation advanced but little, and only commenced under favourable circumstances in June; plants consequently made the greater portion of their growth after Midsummer, and during the Autumn, at which season the shortness of the days, and an unusual deficiency of sun heat, were insufficient to enable them to complete the process of lignification.

October was nearly 2° below the average of its temperature, and consequently did not contribute its usual share towards maturing the wood of the season. November was fully 3° below the mean. December was seasonable during the first fortnight; but a most remarkable change took place after the 15th. The mean

temperature of the last 16 days of the month was 46°; instead of the temperature which usually occurs at the winter solstice, this corresponds with that generally experienced even after the vernal equinox. The rise of temperature, above that of November, was also greater than what takes place between March and April. The thermometer was seldom below 40° at night, and never at freezing. These circumstances all contributed to bring on excitement in the fluids of plants, as was evidently manifested in the production of young shoots by many species. On Christmas day the thermometer in the shade stood at $54\frac{1}{2}°$.

In the beginning of January the weather was slightly rainy, and so unusually warm, that the lowest temperature observed on the 2nd of the month was 41°, and for each of the four first days the thermometer marked 48° in the day, the wind blowing from the S. and S. W. On the 5th the wind shifted to the N. W. and the temperature began to fall, but up to the 7th the thermometer did not sink below 27°. After this, winter may be said to have set in; the weather continued to increase in severity till the night between the 19th and 20th, when it arrived at its greatest intensity and the thermometer sank in the morning of the 20th to $-4\frac{1}{2}°$, the ground being scarcely covered with snow.

In quoting the temperature throughout this paper, I have only taken the observations made upon thermometers placed under ordinary circumstances. But where the thermometer was so isolated, as to be cut off from the influence of the heat emitted by surrounding bodies, the temperature was in reality much lower, as will be seen by observing the column, in the following table, in which the observations upon the radiating thermometer are recorded. The daily register of the weather during this period was as follows—

Days.	Temperature.		Wind.		Rain.	Radiating Therm.	Observations.
	Max.	Min.	Direction.	Force.	In. Pts.		
1	48	32	S	Little	.01	27	Fine; slight rain.
2	48	41	S	Brisk	.02	37	Cloudy and fine.
3	48	27	S	Little	.04	22	Very fine.
4	48	28	SW	Ditto		25	
5	34	30	NW	Ditto		29	
6	36	33	NE	Ditto		32	Dense fog.
7	35	27	NE	Ditto		23	Bleak and cold.
8	30	22	E	Ditto		20	Frosty, slight snow.
9	25	22	NE	Ditto		20	
10	26	13	NE	Ditto		9	Frosty.
11	27	11	N	Ditto		5	
12	24	9	E	Ditto		0	
13	25	20	NE	Ditto		16	
14	26	4	N	Ditto		— 3	Ditto with slight snow.
15	26	15	NW	Ditto		9	Frosty.
16	29	21	NE	Ditto		19	Ditto and foggy.
17	30	20	N	Ditto		18	Ditto.
18	23	19	NE	Brisk		10	Snowing.
19	22	— 4½	N	Little		—12	Severe frost and clear.
20	11	7	N	Ditto		3	Most intense frost; Therm. at 8 A. M. at Zero.
21	38	28	SE	Ditto		22	Overcast; thawing.
22	46	29	SE	Ditto		25	Fine.
23	37	24	E	Ditto		18	Hazy and cold.

At Sevenoaks,* the following hourly and other observations, made by Mr. Rogers, are too curious to be omitted.

Friday, January 19, 5 P. M. . . . 12° clear.
5½ . . . . . 7 do.
6½ . . . . . —½ becoming overcast.
7½ . . . . . 12 overcast.
11 . . . . . 3 clear.
Saturday, January 20th, 12½ A. M.—2 do.
8 . . . . —3 do.

* At this place a singular phænomenon was observed by Mr. Rogers. During the extreme cold the branches of a lime-tree, which overhangs a part of his garden, drooped so as completely to lie on the ground, and those above fell proportionately; there was neither ice nor rime on them to increase their weight, so that this phænomenon must have been some direct effect of cold. The branches recovered themselves as the day advanced and grew warmer, and eventually they so completely regained their original position, that Mr. Rogers at first thought his gardener had cut away all that drooped, and impeded the path the morning before.

The foregoing observations were made with two self-registering thermometers, one vertical and one horizontal, laid upon a board, on a bank of snow facing N. W. One of the instruments was made by Knight of Foster Lane, the other by a different person, and both had been compared and tested accurately with a thermometer made by Newman. The register of the horizontal instrument became deranged at the $6\frac{1}{2}$ P.M. observation, the spirit receding from the register, which was lodged against the bend of the tube. The remaining observations were with the vertical thermometer (Six's), checked by the mercurial side of the horizontal one; but in the observation at $12\frac{1}{2}$ A.M. the mercury had passed the register of the vertical thermometer, so that an allowance of 1° is made on the two last observations for the immersion of the register in the mercury.

In the interval between the last two observations, the mercury had descended so as to pass the upper end of the register, indicating the point it had reached by a globule, which had become detached, and which remained lodged in the bent part of the tube beyond the register, shewing a temperature of at least 5° below zero; how much lower it was, there was no evidence to prove.

At Langley Farm, near Beckenham, in Kent, the residence of LANCELOT HOLLAND, Esq., it was observed, that on the night of the 19-20th of January a thermometer facing the west, six inches above the ground and 20 yards from the house, and from any body which could radiate heat, fell to $13\frac{1}{2}$° below zero. It stood at that point when Mr. HOLLAND examined it a little after seven in the morning. It fell to zero soon after sunset; at 11 P.M. on the 19th it was 3° below that point. In the morning of the 20th, Mr. HOLLAND examined two other thermometers attached to the house: the one facing the north was 7°, and that to the west 6° below zero.

At Redleaf, near Tonbridge, Mr. WELLS reports, the cold to have been only 1° on the morning of the 20th, and the ground covered 8 inches deep with snow.

At Cambridge, according to Professor HENSLOW, the thermo-

meter was observed in the Botanic Garden at 3° above zero on the 20th at 11 P. M.; and it was, therefore, in all probability, in the morning as low as near London. Among other facts it was noticed, that Vinca major and Euphorbia amygdaloides among our native plants were much injured. Even the young shoots of all the trees in the plantations near Cambridge suffered more or less, and what seemed very remarkable, of none more so than the beech.

In the garden of the Rev. FREDERICK BEADON, at North Stoneham, in Hampshire, the thermometer fell on the morning of the 20th to zero.

At Claremont, the English seat of H. M. the KING of the BELGIANS, Mr. M^{c}INTOSH states, that against a white wall, 4 feet from the ground, over a gravel walk, and exposed without shelter to the east, the thermometer indicated 12° below zero, and that at Walton, 3 miles from Claremont, it was said to be as low as—14°. The ground was not covered, at the most, with more than 6 inches of snow, and in many places was scarcely coloured. At this place it was ascertained, that on an open part of the lawn, about 50 feet above the general level of the park, the ground was frozen to the depth of 28 inches.

In the Glasgow Botanic Garden, Mr. S. MURRAY states, that the lowest range of the thermometer during January and February was 1° below zero, but 5 miles distant from Glasgow it was $3\frac{1}{2}$° below zero. He however adds, that about 8 inches of snow were by a partial thaw half dissolved, and afterwards frozen so firm, that the Green of Glasgow was used as skating ground, and during this period the branches of plants were like ropes of ice—the varieties of Rhododendron arboreum suffered severely at that time.

At Worksop Manor, in Nottinghamshire, the seat of the Earl of SURREY, the thermometer was seen at 3° above zero, on the morning of the 20th of January; the snow at the time lying, on an average, 6 inches deep, and covering a great part of the foliage

of the evergreens. In the neighbourhood of Worksop the cold was still more severe; the thermometer having stood at Osberton, the residence of G. S. FOLJAMBE, Esq., at 2° below zero.

But although the frost, making all allowance for errors in instruments, was thus severe in some places, it appears, as might be expected, that it was far less intense in the western and southern parts of the island.

At Brenchley, near Lamberhurst, in Kent, whence some returns have been furnished by Mr. HOOKER, the amount of frost was not ascertained, but he states that he examined his thermometer nightly after 11 P. M., and never found it below 14° above zero. Mr. HOOKER's nursery is situated on a gentle slope to the north, with a slight valley running through the middle of it from south-west to north-east. On each side of this valley the land rises gradually, and is always inclined to be rather damp for some distance up the rising ground; in some few parts the damp extends to the highest opposite grounds. In these places the frost was most destructive.

At Arundel Castle, in Sussex, the residence of the Duke of NORFOLK, the thermometer fell to 9°, according to Mr. ROBERT WILSON, but it stood for several weeks between 12° and 20°. The snow, which fell occasionally, never exceeded the depth of from 3 to 4 inches, and did not remain on the ground longer than a week or ten days. Near Worthing the temperature on the morning of the 20th was as low as 2° above zero.

At Carclew, in Cornwall, the seat of Sir CHARLES LEMON, Bart., no register of the weather was preserved, but Mr. BOOTH states, that as far as he recollects, the thermometer against a north wall in the garden did not fall lower than 12° above zero. The depth of frost in the ground did not exceed seven inches. The weather, previously to the great frost, was unusually dry.

I have no certain return from Binstead, in the Isle of Wight, but Mr. FLEMING's gardener states, from observations made in the garden of the Rev. AUGUSTUS HEWITT, that the greatest frost occurred on the morning of January 15, when the thermometer fell to 15°; and this agrees with a communication with which I have been favoured by Dr. BROMFIELD of Ryde, whose thermometer fell to 18° on the evening of the 15th of January, and never sunk lower, nor could he ascertain that it fell below 15° anywhere in that town. It is deserving of notice, that on this day the lowest temperature near London was 21°.

At Pitmaston, near Worcester, Mr. WILLIAMS states, that in his garden on a gravelly soil, about 40 feet above the Severn at low water mark, and a mile distant from that river, " the thermometer was down at 12° on the morning of the 15th, and at 13° on the morning of the 20th; those were the two coldest nights experienced. The instrument was fully exposed to the air on the east side of some paling, some few leaves of a laurel intercepting the radiation from the bulb of the thermometer to the heavens; had it been placed on the surface of the ground, and that surface had a covering of snow on it, and had the bulb of the instrument been so placed as to have radiated its caloric into space, it would doubtless have sunk many degrees lower; however that would not have been the temperature of the air at 5 feet above the surface, but the temperature of the leaves or parts of the plant exposed to the sky."

Sketty Hall, the seat of L. W. DILLWYN, Esq., is situated about three miles west of Swansea, half a mile from the sea, and only 80 or 90 feet above its level. At this place, it is believed, that the thermometer never sank below 15°; but at a gentleman's house about 8 miles from Sketty it fell to 1°. Penllergare, the residence of DILLWYN LLEWELYN Esq., and Penrice Castle, that of C. R. M. TALBOT, Esq. M. P., are both occasionally referred to by Mr. DILL-

WYN; the former is much higher than Sketty, more exposed, and four miles further inland, the latter is in nearly the same situation as Sketty.

From Singleton, near Swansea, Mr. VIVIAN states, that the lowest degree of cold experienced in that neighbourhood was on the morning of the 20th, when Fahrenheit's thermometer stood at 15° soon after day break. The depth of snow at no time exceeded 2 inches, and during the severest weather there was no snow on the ground.

Near Liverpool, the frost was much less intense than around London; Mr. WALKER states, that, in the neighbourhood of that town, gardens suffered far less than in places to the East and South, especially in Yorkshire, Derbyshire and Nottinghamshire. Calderstone, Mr. WALKER's residence, is from 100 to 150 feet above the sea; the register thermometer did not fall below 9° on the morning of the 20th, nor could he learn that it had been lower in his vicinity. The greatest depth to which the frost penetrated the soil was found to have been from 12 to 18 inches, accordingly as the ground was covered with grass or otherwise. Very few of his extensive collection of evergreen trees and shrubs were entirely destroyed. It was here, and elsewhere, remarked that the double Ulex europæus was more hardy than the wild species, and that Ulex strictus, the Irish furze, suffered more than either.

In Ireland, as is usual, the winter was much less severe; Mr. MACKAY reports the lowest temperature in Trinity College Garden, Dublin, to have been only 20°. Mr. ROBERTSON, in the Gardener's Magazine, speaks of the cold of Kilkenny as having also been 20°, at the distance of 40 miles from the sea, and at the computed elevation of 500 feet.

In the Glasnevin Botanic Garden, the thermometer is stated by Mr. NIVEN not to have fallen below 15° above zero. In this station

the dwarf fan-palm, (Chamærops humilis) has stood for two winters almost without injury.

It is however remarkable, that in some of the North Eastern parts of England, the cold should have been much less than about London, and in several parts of the South Coast.

According to the observations of the Hon. and Rev. W. Herbert, at Spofforth near Wetherby in Yorkshire, the thermometer never fell below 13° with him, or below 10° in that neighbourhood. But the cold seems in this place to have compensated by its duration for its want of intensity. When the temperature relaxed with rain in February, although the snow melted nearly away, the rain froze for about 48 hours as it fell, and covered the whole face of the country with a sheet of ice, which was not long after buried under a fresh coat of five inches of snow, and it was a considerable time after the frost broke up finally, before the under coat of ice was completely thawed. Indeed Mr. Herbert is of opinion, that the great injury to the shrubs was not occasioned by the severest night; for, when the weather relaxed for a few days, the leaves of the white Rhododendron arboreum were not killed, nor the wood of R. Acklandi; but after the snow had returned, the glass fell one night to 16°, and the great mischief was everywhere apparent the next day. "If there had not been an intermediate remission of the frost, the plants would perhaps not have suffered so much."

At Owston, near Doncaster, several valuable facts were noted down by Philip Davies Cooke, Esq., from plants growing in loam on a substratum of magnesian limestone; this place is situated in a low, not wet position, in latitude $53\frac{1}{2}^{o}$. Here the thermometer is reported not to have fallen below 6° above zero. Among other facts, of which use has been made elsewhere, Mr. Cooke remarks, that he found those plants suffering least, which were most sheltered from the morning sun. In a clayey loam, two

feet in depth, on a limestone substratum, several laurustinuses, thus sheltered, and in a situation not affected by damp, did not suffer at all; and other specimens against walls, on which the sun never shines, were equally uninjured.

At Belsay Castle, in Northumberland, in the neighbourhood of which the thermometer was not remarked lower than 10° above zero, the ground was covered with snow to the depth of from 1 to 2 feet, during at least eight weeks; and consequently but little damage comparatively was experienced. For this reason the results observed in this garden are at variance with those obtained elsewhere, and the effects of the frost were much less severe than would have been expected from the northerly station of Belsay. Cauliflowers covered by handglasses were unharmed. A standard plant of Spartium ætnense had only the points of its shoots scorched by the frost, but it was not in its usual health in the following summer. Camellias with a slight covering of haulm, although weakened, were saved, but Myrtles were killed to the ground. Among the plants, which sustained little or no injury, were Abies Deodara, Pæonia Moutan, and the following Magnolias, viz. tripetala, auriculata, glauca, and Thompsoniana, as standards, and M. conspicua, against a wall. In a nursery ground, 500 feet above the sea, a cypress, about 20 years old, was scorched, but younger plants were mostly killed; Araucaria Dombeyi, and a scarlet Arbutus were not hurt, and Cunninghamia sinensis was only injured in the upper branches.

From these places, and the other sources already named, a large number of valuable returns of plants killed, and left alive, has been obtained; and, in order to ensure all possible accuracy, they have been referred back to their several authors, for such corrections and additions as it might appear desirable to make. The result will I hope be found of great interest.

It is only by repeated observations of this kind that we can

hope for certain success in the important object of introducing exotic species hardy enough to bear our climate; consequently to multiply and systematize such observations is one of the most useful employments in which the horticulturist can engage. It is far more likely to lead to results of importance than attempts to acclimatize plants; an object which has already occupied so much time to so little purpose, that I doubt whether any one case of actual acclimatization can be adduced; that is to say, any one case of a species naturally tender having been made hardy, or even hardier than it was originally. Not to mention other cases in point, Cerasus Laurocerasus is as tender as it was in PARKINSON'S time, and yet it has been raised from seeds through many generations; the potatoe retains its original impatience of frost, and so does the kidney bean, which last might at least have been expected to become hardier, if reiterated raising from seed in cold climates could bring about that result. The many beautiful and valuable half-hardy hybrids, lately provided for our gardens, are no exception to this statement, for they are not instances of a tender species being hardened, but of new and hardy creations obtained by the art of man from parents, of which one is hardy and the other delicate. Acclimatization, in the strict sense of the word, seems to be a chimæra.

What gives such evidence, as is now about to be adduced, its great value, is the well known fact, that no botanist can ever tell with precision whether a plant will support a climate to which it is unaccustomed. No one has as yet succeeded in pointing out any decided connection between the structure of plants and their powers of enduring cold, and consequently we cannot judge *a priori* what amount of cold a given plant will bear. If this could be effected, one of the most important of all steps would have been taken in the progress of horticulture, and we should be spared the loss and disappointment which now attend all extensive attempts at naturalizing exotic species. It is undoubtedly true, that particular

natural orders of plants affect particular and well marked climates; as palms, the plains of the tropics; Cactaceæ, the temperate and dry regions of America; and epiphytal Orchidaceæ, the hot and damp regions of all countries near the equator. But even these cases are not free from striking exceptions; we have the fan palm (*Chamærops humilis*) growing as far north as Rome, and the wax palm (*Ceroxylon andicola*), flourishing on the mountain Quindiu, at the height of nearly 9,000 feet above the sea, in bleak places where the temperature falls to 44°. Of Cactaceæ, a species of Opuntia, with no other protection than a hand-glass, or occasionally in the most severe weather a mat thrown over it, was able to sustain the late winter at Owston, near Doncaster, where it must have endured a temperature of 9° Fahrenheit; Opuntia ferox stood unprotected at Glasgow and Dropmore; and according to NUTTALL, Melocactus viviparus and another are found in the elevated mountainous regions of the Missouri, where they are exposed to "intense frost." Finally, epiphytal Orchidaceæ have been found at the elevation of 14,000 feet on the Peruvian Andes, where the cold is very considerable, in the case of Oncidium nubigenum; Dendrobium denudans inhabits regions in the north of India, where it grows upon oaks and is occasionally exposed to frost, according to Dr. ROYLE; and Mr. HARTWEG met with a species of Lælia (?) in the mountains of Leon in Mexico, on branches of oak trees, at an elevation of 8,000 feet above the sea, where it sometimes freezes.

Under these circumstances, speculation as to the laws which govern such conflicting results, is in the present state of our knowledge premature, and the only useful information which can be given consists of naked facts. These facts are, however, of the utmost practical consequence, because they enable us to judge whether it is probable, that a given species, which has been the subject of actual experiment in one climate will succeed in another or not. For this reason it has been thought advisable to go into the numerous minute details included in this report.

The utmost which science can at present do, with reference to this subject, is to judge from probability. We know that the more nearly the climates of different countries approach each other, the greater the probability that the species peculiar to those countries may be advantageously interchanged. But although this is a valuable guiding fact for general purposes, it loses its value, or at least from the imperfection of our information appears to lose it, when we descend to particulars. Because the climate of many parts of the Himalaya mountains resembles that of England, it is probable that the plants of the former will grow in the latter country, and experience shows that this will really happen. But while such is the general fact we continually find exceptions to it, which nothing but actual experiment could have led us to discover. For instance the Deodar cedar appears hardy all over England, but Abies Webbiana suffers so much from cold, that it is doubtful whether it is likely to be of national importance in the midland and northern counties, except in very favourable situations; yet they are both from the same tracts of country, and we could not have judged beforehand that their constitution would be different. In like manner, Benthamia grows on the second range of the Himalaya mountains, along with Berberis aristata, asiatica, and others, and belongs to as hardy a family as they do. Yet Benthamia has been almost everywhere killed by the frost, except in Devonshire, Cornwall, and South Wales, and the others have as generally resisted it; and there is no apparent or theoretical difference in the nature of these plants to account for the difference. Again, if we could judge beforehand of such things, it would be said that the climate of Van Diemen's Land, especially that of the southern face of the island, would yield plants suitable to Devonshire; and such appears to be the fact with such species as Acacia stricta and diffusa, Correa alba, Callistemon lanceolatus, Grevillea rosmarinifolia, and some others; but on the other hand, Aster argophyllus, Pomaderris elliptica and Veronica decussata, which is quite a mountain

plant, were killed. No one could have suspected that this would happen; it was necessary to ascertain the fact experimentally.

There is no doubt, that if this kind of investigation were prosecuted with sufficient care, and for a series of years, many plants not now reputed to be hardy would be added to our outdoor gardens. It will be seen that Hamelia patens, a West Indian plant, lived for several years at Claremont; Peganum Harmala, a native of the hot plains of Syria, survived over last winter at Cambridge, and it will be one of the objects of another part of this paper to point out many similar cases. It is not, however, in a casual report of this description that so extensive a subject can be properly treated, all that is now proposed, is to call attention to certain facts which appear to be important.

In order to save space, and moreover for the sake of contrasting the effects of different degrees of cold upon particular species, a part of the observations has been thrown into the following tabular form; the remainder will be given geographically. In the table, the stations at which the observations were made are arranged according to the amount of cold actually experienced, as nearly as I have been able to ascertain it; but as I entertain no doubt that the temperature was really lower in some cases than that actually observed, the proximity of the columns of observations is not exactly determined by the amount of cold recorded by the several observers. For the sake of convenience, and for the purpose of economizing space, the following signs have been employed instead of words to express the amount of injury actually sustained:—

[• indicates that a plant has been entirely killed, or so nearly so that it was not worth preserving; ⊕ that it was much injured, but not killed; o that it was uninjured, or hurt in no considerable degree.]

	Claremont, —12°.	Hort. Garden, —4½°.	Norwich, —3°.	Glasgow, —1°.	Redleaf, —1°.	North Stoneham, 0°.	Cambridge, + 3°.	Dropmore, + 6°.	Brenchley, + 14°.	Rolleston, + 5°.	Owston, + 6°.	Arundel, + 9°.	Liverpool, + 9°.	Carclew, + 12°.	Pitmaston, + 12°.	Spofforth, + 13°.	Sketty, + 15°.	Singleton, + 15°.	Glasnevin, + 15°.	Isle of Wight, + 15°.	Bicton, + 18°.	Kilkenny, + 20°.	Dublin Col. Bot. Garden, + 20°.	Abbotsbury in Dorsetshire.
Abies Douglasii	.	0	0	●	0	0	.	0	.	0	0	.	●	0	.	.	.	.	.	.	.	.	.	.
— Deodara	.	0	0	.	0	0	0	.	0	0	.	0	.	0	0	.	.	.	.	.	.	0	.	0	.
— Webbiana	.	.	●	.	●	0	0	.	●	.	0	0	.	.	0	.	.	.	.	.	.	.	.	.	.
— Morinda	.	.	0	0	.	.	.	.	0	.	0	.	.	.	0	.	.	.	.	.	.	.	.	0	.
— nobilis	.	.	0	0	.	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	●	.
Acacia dealbata	.	.	●	●	●	.	●	.	.	.	.	.	.	.	.	.	.	●	.	.	.	●●	0	.	.
— affinis	.	.	●	.	●	.	.	.	.	.	.	.	.	.	0	.	.	●	.	.	.	.	.	.	.
— Julibrissin	.	.	●	●	.	.	.	.	.	.	.	0	.	0	.	.	.	●	.	.	.	.	.	0	0
— diffusa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.	.
— verticillata	.	.	●	.	.	.	.	.	.	.	.	.	.	.	●	.	●	●	.	0	.	.	0	.	.
— lophantha	.	.	.	.	.	.	●	.	.	.	.	.	.	.	●	.	.	●	.	.	.	.	.	.	●
Aloysia citriodora	.	.	●	.	.	.	.	.	.	.	.	●	.	.	0	.	.	●	●	0	0	.	0	0	●
Alstrœmeria pulchella	.	.	0	.	.	0	●	.	0	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.
— aurea	.	.	.	.	0	0	.	.	.	.	.	.	.	.	.	.	0	.	.	.	0	.	.	0	.
Araucaria Dombeyi	.	.	0	.	.	0	0	.	0	0	.	.	.	.	0	.	.	.	.	0	0	0	.	.	.
— brasiliensis	.	.	●	.	.	.	.	.	●	.	.	.	.	.	.	.	.	.	.	.	.	●	.	.	.
Arbutus Unedo	.	.	●	●	●	●	●	0	.	●	●	●	0	0	●	0	0	●	●●	0	●	0	.	.	0	0
— procera	.	.	.	0	●	.	.	.	.	.	●	.	.	.	0	●	.	.	0	0	.	.	0	.	0	0
— Andrachne	.	.	.	●	.	●	●	0	.	●	.	●	●	.	.	0	.	.	0	0	.	0	0	.	0	0
Aristotelia Macqui	.	.	.	●	●	.	.	●	.	.	.	●	.	.	.	0	.	.	●	0	.	0	.	.	●	0
Aucuba japonica	.	.	●	0	0	0	.	0	●	●	●	0	0	0	0	0	.	0	0	0	.	0	.	.	0	.
Benthamia fragifera	.	.	.	●	.	●	●	●	.	●	●	.	●	●	.	0	.	.	0	0	.	.	●	0	0	.
Berberis Aquifolium	.	.	.	0	.	0	.	0	.	.	0	0	0	.	0	0	.	.	●	.	.	0	.	0	.	0
— fascicularis	.	.	.	●	.	●	●	●	.	.	●	●	.	.	0	0	.	.	.	0	.	0	0	.	.	.
— glumacea	.	.	.	0	0	0	●	0	.	.	0	.	0	.	0	0	.	.	.	.	.	.	.	.	0	.
Bignonia capreolata	.	.	●	0	●	.	.	0	.	.	.	.	0	0	.	.	.	●	.	0	.	.	.	.	.	0
— grandiflora	.	.	●	0	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.	●	.	0	0
— radicans	.	.	●	0	0	.	●	0	.	●	.	●	0	.	.	.	.	.	0	0	.	0	.	.	0	.
Buddlea globosa	.	.	.	●	.	.	.	●	.	.	.	●	0	.	.	0	●	.	0	0	.	0	.	.	0	●
Buxus balearica	.	.	●	0	●	●	.	.	0	.	●	0	0	0	.	0	.	.	0	0	.	.	.	.	0	0
Caprifolium flexuosum	.	●	●	.	.	●0	●	.	●●	.	.	.	●	.	0	.	●	0	0	.	0	.	0	0	●
— japonicum	.	.	●	.	.	.	●	.	●	.	.	.	.	.	0	.	.	.	.	.	0	.	.	0	●
Camellia japonica	.	●	●	●	.	●	0	.	0	●●	.	0	.	0	0	.	●	0	0	.	0	0	0	.	0
Catalpa syringæfolia	.	.	0	0	0	.	0	.	.	.	0	0	0	.	0	.	.	0	0	.	.	.	.	.	0
Ceanothus azureus	.	.	●	●	.	.	.	.	.	.	.	.	.	.	●	.	.	.	0	.	.	.	0	0	.
Cerasus lusitanica	.	0	0	0	●	●	.	.	0	●	0	0	0	.	0	0	.	0	0	.	.	.	.	0	0
— Laurocerasus	.	0●	0	●	●	●	.	●	●	●	●	0	0	.	0	0	0	0	0	.	0	.	.	0	0
Chimonanthus fragrans	.	0	0	0	.	0	0	●	●	.	●	.	0	.	0	0	.	0	0	.	.	.	0	0	0
Chrysanthemum indicum	.	●	0	.	.	.	.	.	●	.	.	.	0	.	●	.	.	.	0	.	.	.	0	0	0
Cistus cyprius	.	.	●	.	●	●	●	.	.	.	●	.	.	●	.	.	.	.	.	.	0	.	.	.	0
— creticus, &c.	.	.	●	●	.	●	●	●	0	.	.	.	.	●	●	.	0	●	●	.	.	.	.	.	0
Clematis cirrhosa	.	.	●	.	.	.	.	●	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0
— florida	.	.	.	0	0	.	.	0	0	0	.	0	.	.	.	0	.	.	0	.	.	.	.	0	0
— montana	.	.	.	0	0	.	●	0	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.	0
— flammula	.	.	.	0	0	.	.	0	.	0	.	0	.	.	.	.	.	.	0	0	.	.	.	0	0

	Claremont, —12°.	Hort. Garden, —4½°.	Norwich, —3°.	Glasgow, —1°.	Redleaf, —1°.	North Stoneham, 0°.	Cambridge, + 3°.	Dropmore, + 6°.	Brenchley, + 14°.	Rolleston, + 5°.	Owston, + 6°.	Arundel, + 9°.	Liverpool, + 9°.	Carclew, + 12°.	Pitmaston, + 12°.	Spofforth, + 13°.	Sketty, + 15°.	Singleton, + 15°.	Glasnevin, + 15°.	Isle of Wight, + 15°.	Bicton, + 18°.	Kilkenny, + 20°.	Dublin Col. Bot. Garden. + 20°.	Abbotsbury in Dorsetshire.
Clianthus puniceus																								
Cotoneaster microphylla																								
— affinis																								
Coronilla glauca																								
Cratægus Azarolus																								
— mexicana																								
Cupressus lusitanica																								
— sempervirens																								
Cunninghamia sinensis																								
Daphne Laureola																								
— pontica																								
Deutzia scabra																								
Duvaua undulata																								
— latifolia																								
— dependens																								
Edwardsia microphylla																								
— chrysophylla																								
— grandiflora																								
Eriobotrya japonica																								
Erica australis																								
— gracilis																								
— mediterranea																								
— arborea																								
— concinna																								
Escallonia rubra																								
— montevidensis																								
— pulverulenta																								
Eucalyptus pulverulenta, &c.																								
Ficus Carica																								
Fontanesia phyllireoides																								
Fraxinus americana																								
Fuchsia gracilis																								
— virgata																								
— other var.																								
Garrya elliptica																								
Gladiolus psittacinus																								
Glycine sinensis																								
Hydrangea hortensis																								
Ilex Aquifolium																								
Ixias Cape species																								
Jasminum officinale																								
— fruticans																								

	Claremont, — 12°.	Hort. Garden, — 4½°.	Norwich, — 3°.	Glasgow, — 1°.	Redleaf, — 1°	North Stoneham, 0°.	Cambridge, + 3°.	Dropmore, + 6°.	Brenchley, + 14°.	Rolleston, + 5°.	Owston, + 6°.	Arundel, + 9°.	Liverpool, + 9°.	Carclew, + 12°.	Pitmaston, + 12°.	Spofforth, + 13°.	Sketty, + 15°.	Singleton, + 15°.	Glasnevin, + 15°.	Isle of Wight, + 15°.	Bicton, + 18°.	Kilkenny, + 20°.	Dublin Col. Bot. Garden, + 20°.	Abbotsbury in Dorsetshire.
Jasminum revolutum	●	●	◎	●	●	●	.	◎	.	○	◎	◎●	.	○	.	●	○	○	○	.	.	○	○	.
Juniperus Lycia	.	◎	.	.	.	.	.	○	.	●	.	.	.	.	.	.	○	○	.	.	.	○	○	.
— chinensis	○	○	○	.	.	.	●	.	.	○	.	.	.	○	.	.	○	○	.	.	.	○	.	.
— recurva	.	○	○	.	.	.	.	○	.	○	.	.	.	○	.	.	○	○	.	.	.	.	○	○
— phœnicea	.	○	.	.	.	.	.	.	.	●	.	.	.	○	.	.	●	○	.	.	.	.	.	.
Lagerstrœmia indica	.	◎	.	.	.	.	.	.	.	.	.	.	.	.	.	◎	.	.	.	.	.	.	.	◎
Laurus nobilis	◎	●	◎	●	●	◎	◎	◎	◎	◎	◎	◎	◎	○	.	◎	○	○	.	○	.	.	○	○
Ligustrum lucidum	●	●	●	●	◎	◎	●	◎	◎	●	●	.	.	○	.	●	○	○	.	○	.	.	○	○
Maclura aurantiaca	.	○	○	◎	◎	○	.	◎	.	◎	◎	.	.	.	.	.	○	○	.	.	.	○	○	○
Magnolia grandiflora	◎	○	◎	.	◎	○	.	○	.	○	○	○	.	○	.	.	○	○	.	.	○	○	○	○
Morus alba	●	◎	○	.	.	.	.	.	.	◎	○	○	.	.	.	.	.	.	.	.	.	.	.	○
Myrtus communis	●	●	.	.	.	○	.	.	.	.	◎	◎	.	◎	◎	.	◎	○	.	◎	.	.	◎	◎
Nerium Oleander	.	.	●	.	.	.	.	.	.	.	◎	.	.	.	.	.	●	.	.	.	.	.	.	◎
Olea europæa	.	●	.	.	.	.	.	.	.	●	○○	.	.	○○	.	.	.	.	◎	.	.	.	○	◎
Passiflora cærulea	.	●	.	.	.	●	●	●	.	.	◎	.	.	.	.	◎	○	◎	.	.	.	.	○	.
Pæonia Moutan and var.	○	○	○	◎	◎	○	○	◎	.	○	○	○	○	○	.	○	○	○	.	○	.	.	○	○
Phillyrea obliqua, &c.	○	◎	.	.	.	○	◎	.	.	○	.	.	.	.	.	.	○	○	.	.	.	.	○	○
— media, &c.	●	◎	◎	◎	.	○	○	.	.	.	○	◎	.	.	.	.	○	○	.	.	.	.	○	○
Phormium tenax	.	●	.	.	.	●	◎	.	.	.	.	.	.	○	.	.	.	.	.	.	◎	.	○	●
Photinia serrulata	.	◎	◎	.	●	○	.	◎	●	●	◎	.	.	○	.	.	○	○	.	.	.	○	○	○
— arbutifolia	.	●	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	◎	.	.	.	.	.	.
Pinus longifolia	.	●	.	.	.	.	.	●	.	.	.	.	.	○	.	.	.	.	.	.	.	.	.	●
— insignis	.	●	●	.	.	.	.	●	●	.	.	.	◎	.	.	.	.	.	.	.	.	.	.	.
— Pinea	.	○	○	.	.	.	.	◎	○	○	○	.	.	○	.	.	●	.	.	○	.	.	.	○
— Llaveana	.	○	.	.	.	.	.	○	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
— palustris	.	●	●	.	●	.	.	○	●	.	○	.	.	○	.	.	.	.	.	○	.	.	.	○
— excelsa	.	○	○	.	○	.	.	○	.	○	.	.	○	.	.	.	.	.	.	.	.	.	○	○
— halepensis	.	●	◎	.	.	.	.	◎	○○	.	●	.	◎	.	.	.	.	○	.	.	.	.	○	○
— canariensis	.	.	.	.	.	.	.	◎	.	.	.	.	.	.	.	.	.	.	◎	.	.	.	◎	.
— Sabiniana	.	○	◎	◎	.	.	.	○	○	○○	.	.	.	○	.	.	.	○	.	.	.	.	.	◎
— Lambertiana	.	○	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pittosporum Tobira	●	.	.	.	.	.	.	.	.	●	●	.	.	.	.	.	○○	◎	.	.	.	.	○	◎
Punica Granatum	◎	◎	◎	.	○○	.	◎	◎	.	.	◎	○	.	○	.	○	○	○	.	.	.	.	.	○
Pyrus variolosa	.	◎	●	.	.	.	.	.	.	.	.	.	.	.	.	.	.	○	.	.	.	.	.	.
Quercus Suber	.	○	◎	◎	.	○	.	.	.	.	○	.	.	○	.	.	◎	○	.	.	.	.	○	○
— Ilex	.	◎	○	.	.	○	◎	◎	.	○	○	○	◎	○	.	.	○	○	.	○	.	.	○	○
— virens	.	●	○	.	.	.	.	.	.	○	.	.	.	.	.	.	.	○	.	.	.	.	.	.
Rhamnus Alaternus	○	◎	◎	●	.	.	◎	.	○	●	○	○	.	.	.	.	○	○	.	.	.	○	○	○
Ribes speciosum	◎	◎	○	◎	◎	○	◎	●	.	◎	.	○	.	○	.	.	○	○	.	.	.	.	○	○
— glutinosum	○	◎	.	●	.	○	.	.	.	.	.	○	.	.	.	.	.	.	.	.	.	.	○	.
— malvaceum	.	◎	●	●	.	○	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	○
— punctatum	.	◎	.	.	.	.	.	.	.	◎	.	.	.	.	.	●	○	○	.	.	.	.	○	.

	Claremont, —12°.	Hort. Garden, —4½°.	Norwich, —3°.	Glasgow, —1°.	Redleaf, —1°.	North Stoneham, 0°.	Cambridge, +3°.	Dropmore, +6°.	Brenchley, +14°.	Rolleston, +5°.	Owston, +6°.	Arundel, +9°.	Liverpool, +9°.	Carclew, +12°.	Pitmaston, +12°.	Spofforth, +13°.	Sketty, +15°.	Singleton, +15°.	Glasnevin, +15°.	Isle of Wight, +15°.	Bicton, +18°.	Kilkenny, +20°.	Dublin Col. Bot. Garden, +20°.	Abbotsbury in Dorsetshire.
Rhododendron ponticum	.	0	0	●	.	.	●	0	.	0	.	0	.	0	.	●	0	0	.	.	.	.	.	0
— arboreum	.	.	●	.	●	.	●	.	●●	.	.	●	.	.	0	.	●●	●0	●	.	.	.	.	0
— hybrid	.	.	.	●	0●	●	0	0	.	.	.	0	.	.	0	0	.	0●	0	0	●	.	.	.	0	0
Rosa Banksiæ	.	.	.	●	●	●	●	.	0	.	●	●	.	0	●	.	0	●	.	0	.	.	0	0	.	0
— indica	.	.	.	●	●	●	●	●	0	●	●	●	●	.	●	●	0	●	0	0	0	0	.	0	.	0	0	0
—, Bourbon	.	.	.	●	●	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.	.	0	0
—, hybrids of moschata		.	●	●	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0	.	0	.	.	0	0
—, ——— of indica	.	.	●	●	●	.	●	.	.	.	.	.	.	0	0	.	0	0	.	0	.	0	.	●
Rosmarinus officinalis	.	.	●	.	.	●	.	●	●	●	.	0	●	.	.	.	.	●	0	0	.	.	.	0	0
Ruscus aculeatus	.	.	.	●	0	●	.	●	●	.	.	0	0	.	.	0	.	.	.	.	.	.	.	0	0
Sollya heterophylla	.	.	.	●	●	.	.	●	.	●	.	●	.	.	.	●	.	.	●	●	.	0	.	.	●	●
Stranvæsia glaucescens	.	.	●	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	●	.	.	.	.	0	●
Spartium multiflorum	.	.	●	.	.	●	.	.	●	.	.	.	.	.	.	.	.	●	0	.	.	.	.	0	0
— junceum	.	.	.	0	.	●	.	.	●	●	.	0	.	.	.	●	.	.	●	0	.	.	.	.	0
Tamarix gallica	.	.	.	.	●	0	●	.	.	●	0	.	●	.	.	.	.	.	.	0	0	.	.	.	.	0	0
Ulex europæus	.	.	.	●	●	.	●	●	●	●	●	.	●	0	.	●	●	0	.	●	0	.	.	.	.	0	0
— nanus	.	.	.	●	●	.	.	.	.	.	●	.	.	.	.	.	●	.	.	.	0		.	.	.	0	.
— strictus	.	.	.	.	●	●	●	.	.	.	●	.	●	.	.	●	.	●	.	●	0	.	0	.	.	0	.
Viburnum Tinus	.	.	.	●	●	●	●	.	0	●	●	●	●	●	0●	●	●	0	0	●	●	0	.	0	0	0	0	0
Yucca filamentosa	.	.	.	0	0	.	0	0	0	.	.	0	0	0	.	.	.	0	0	0	.	0	.	.	0	0
— gloriosa	.	.	.	0	●	.	●	0	0	●	.	●	0	0	0	0	.	0	0	0	.	0	.	0	0	0
— recurva	.	.	.	0	●	.	0	.	0	0	.	.	0	.	.	0	.	0	.	.	.	.	.	.	.	0
—, other species	.	.	.	0	.	.	.	.	.	●0	.	.	.	.	0	.	.	●	0	0	.	.	.	0	.	●

The remainder of the numerous observations which have been put into my hands are arranged geographically; not however exactly according to the political districts in which plants grow, but in regions corresponding in many important respects as to climate. I regret, however, that the incompleteness of our knowledge of the range of numerous species has compelled me to make these regions more extensive than they ought to be. Australia for example should have been separated into, 1st the district

represented by Port Jackson, and 2nd the southern part of the continent including Van Diemen's land; and under south America in like manner, the plants of the plains of Chili, those of the mountains, of the opposite side of the continent, and of the southern extremity, should have each had its separate head. But the time has not come for such approximations to exactness; and no one is yet in a condition to look at the refinements of a general investigation of the connection between vegetation and climate. It will moreover be endeavoured, in the remarks hereafter to be made, to guard against drawing erroneous conclusions from too great an extension of geographical boundaries.

Australia.

Acacia *armata* and *verticillata* survived the winter of 1836-7, but were now killed at Sketty: in the spring of 1837 Mr. Dillwyn turned out some other species which had been hardened in a cold frame, but they all died except A. *affinis* and *pubescens*. A. *affinis* also survived at Glasgow; but though on a wall it was killed to the ground. At Norwich a plant of A. *dealbata* six inches in diameter at the ground was killed. In the Society's Garden every species perished, some having been growing for several years without suffering materially from winter cold. At Carclew A. *stricta* and *affinis* proved more hardy than any others, although both were slightly injured; A. *Sophora* was killed to the ground at this place in 1830-1, but had subsequently attained the height of 15 or 16 feet; after the frost the branches required to be shortened, but there was no appearance of the stem being cracked and injured and the plant became healthy; A. *verticillata*, which had been out for several years, and was about 15 feet high, was greatly damaged; in the course of the summer it made an effort to

grow again, but ultimately died; A. *diffusa* against the front of the stove seemed unconscious of the cold; every plant of A. *lophantha* died. The latter and A. *nigricans* were killed even at Falmouth. At Kilkenny A. *longifolia, armata, lentiscifolia, marginata, decurrens, melanoxylon, dealbata* and *verticillata* were uninjured.

ANTHOCERCIS *viscosa* was killed in the Isle of Wight.

ASTER *argophyllus*, of which there was a large shrub at Carclew, had the bark split all over it; it was killed to the ground, but sprung up again. This species also died in the Isle of Wight; but in the garden of Mr. Fox, at Falmouth, where it has lived seven years, and flowers freely, it was unhurt.

BANKSIA *littoralis* had stood on a south wall in the Society's Garden for 2 or 3 winters, but now died. B. *oblongifolia* was killed in Mr. Fox's Falmouth garden; but B. *ericifolia*, which had grown there as a hardy shrub for 5 years, was untouched.

BEAUFORTIA *decussata* was killed in Mr. Fox's mild garden, at Falmouth.

BILLARDIERA *longifolia*, at the foot of a south wall at Glasgow, was untouched; it also appears to have borne the winter at Kilkenny and Abbotsbury without damage.

CALLITRIS *cupressiformis*, at Carclew, was all killed except one plant, which was very much injured; the latter quite recovered.

CASSINIA *rosmarinifolia* was killed at Bicton.

CORREA *alba*, after having thriven in an open border at Sketty without any protection for six years, was killed by the winter of 1836-7, and another strong plant which was put out in the following spring also perished this winter. At Carclew, trained to the front wall of a greenhouse, the branches which projected from the wall only were killed. In the shrubbery at this place, owing to its being more stunted, the points of the shoots were all that suffered. It was quite uninjured in the

open ground at Kilkenny. C. *speciosa* escaped in a conservatory at Spofforth, where DILLWYNIA *ericifolia* was destroyed. The species of this genus are cultivated in Mr. Fox's garden at Falmouth as hardy shrubs.

CARMICHAELIA *australis*, though not much injured by the winter of 1836-7, was killed to the ground at Sketty, and even, trained to a terrace wall with an eastern exposure at Carclew, it suffered severely. It also died in the Botanic Garden of Belfast.

CASUARINA *equisetifolia* and *stricta* were killed on a south wall in the Society's Garden; the latter had been there for 7 or 8 winters.

CALOTHAMNUS *quadrifida* lived in Mr. Fox's garden at Falmouth.

CALLISTEMON *lanceolatus* was only damaged in the Isle of Wight; this species and some others, trained against an east wall where it flowers freely, was slightly injured at Carclew, where other kinds in the shrubbery were rusty; but the branches were unhurt; in Mr. Fox's garden, at Falmouth, it has lived for 20 years as a hardy shrub; in the Society's Garden it was killed on a south wall. CALLISTEMON *speciosus* appears to have lived on a south wall at Kilkenny.

DORYANTHES *excelsa*, planted out 5 years, was killed at Bicton.

DIANELLA *cærulea* was killed to the ground at Carclew, but sprang again.

DILLWYNIA *ericifolia* perished in a conservatory at Spofforth.

EUGENIA *australis*, and EUTAXIA *myrtifolia*, were both killed in Mr. Fox's garden, at Falmouth.

EUCALYPTUS *pulverulenta* was killed at Carclew, although protected by a double covering of mats. E. *alpina*, 1½ foot high, was found alive 6 inches above the surface at Norwich, having been protected by the snow. All the species died in the Society's Garden, some of them having been fine specimens. At Kilkenny, E. *pulvigera* was uninjured on a naked south wall.

GREVILLEA *rosmarinifolia*, an elegant shrub, proved perfectly hardy

at Falmouth, and at Carclew, where it grows and flowers abundantly in the open border. G. *juniperina* was killed in the former place.

GOODIA *lotifolia* was killed at Sketty, though unhurt by the previous winter.

HAKEA *acicularis* and *linearis* lived without sustaining injury in the open ground at Kilkenny. H. *macrocarpa* was untouched upon a wall at Bicton. H. *ceratophylla*, and H. *pugioniformis*, both of which had been out for two years, were killed at Carclew.

KENNEDYA *bimaculata*, 16 or 17 years old, in the conservatory at Spofforth, was killed to the ground, but it sprung up again. K. *monophylla* was killed at Falmouth.

LOMATIA *longifolia* was cut down at Redleaf.

LEPTOSPERMUM *lanigerum*, against a wall, was not materially injured at Sketty. L. *ambiguum*, a beautiful shrub 8 feet high, in a sheltered situation at the corner of the garden at Carclew, was uninjured. L. *obovatum* lived without protection at Kilkenny. Several species are said to have lived against a wall at Belfast without suffering. In Mr. Fox's garden, at Falmouth, a Leptospermum, called *ambiguum*, has been growing for 17 years, and is 10 feet high, flowering abundantly in the summer.

MELALEUCA *hypericifolia*, *incana*, and *decussata*, which had been trained against a south wall at Carclew, had their bark split from the points of the branches to the root, and consequently were killed. A species of this genus is mentioned by Mr. ROBERTSON as having been uninjured in the open ground at Kilkenny. M. *decussata*, *pubescens*, *ericifolia*, and *depressa*, survived with Mr. Fox, at Falmouth; but the *hypericifolia* was killed even there.

POMADERRIS *elliptica* was killed at Bicton.

SOLLYA *heterophylla*, although it had survived several previous

winters, was killed very generally. At Carclew, in front of the stove, the old stem escaped, but the branches were destroyed; although much injured, it recovered during the summer.

TRISTANIA *laurifolia* was killed under a verandah at Spofforth; it was uninjured under a cold frame at Sketty.

VERONICA *decussata* was generally killed. At Carclew it had stood for years without injury in the shrubbery, but was killed to the ground with the exception of a few small twigs; it however lived at Falmouth.

WESTRINGIA *rosmarinifolia*, in the same situation as the last, was killed at Carclew.

CALIFORNIA; and MEXICO.

ABIES *grandis*, *nobilis*, and *amabilis*, all proved hardy, even in the Society's Garden.

BERBERIS *dealbata*, a Mexican evergreen, in the open border in the Society's Garden, was killed to the ground; but it came up again vigorously. A plant against an east wall sustained little injury.

BOUVARDIA *triphylla* was generally killed, unless at Carclew, where it becomes an herbaceous plant, flowering late every season in the open border.

CRATÆGUS *mexicana* in the Society's Garden was much damaged as a standard, but only slightly on a south wall; it was uninjured as a standard at Sketty.

CEANOTHUS *azureus*, of which there were fine old plants on a south wall in the Society's Garden, was killed to the ground, but sprung up again. At North Stoneham it perished entirely. At Carclew the young shoots of a plant in the shrubbery were killed back to the old wood; but it recovered.

CERASUS *Capollim* was killed in the Society's Garden as an open standard, but was uninjured against a south wall.

DENDROMECON *rigidum*, a small shrub, and the only specimen in the country, was killed in the Society's Garden under a glass covering protected by mats.

PHOTINIA *arbutifolia* was killed in the Society's Garden.

RIBES *glutinosum*, *malvaceum*, and *speciosum* in the Society's Garden, were all killed to the ground, but sprung up again as if uninjured; at Sketty R. *speciosum* was damaged, but not materially.

PINUS *insignis* was generally killed, and evidently proved to be too tender for this climate. P. *Llaveana* was unhurt in the Society's Garden.

TIGRIDIA *Pavonia*, covered with leaves and planted in peat, was nearly killed at Spofforth for the first time. The bulbs in front of the greenhouse, in garden soil, though not touching the wall, were uninjured.

CHINA.

AZALEA *indica*. Of this species there are not many returns. With Mr. BEADON the *double purple* stood with protection, *alba*, under the same circumstances, was much cut, while *phœnicea* and the hybrid *Smithii* were killed. In the Durdham Down nursery near Bristol, all the varieties were killed except *alba*, which was unhurt. At Abbotsbury, A. *phœnicea* was damaged more than *alba*. At Redleaf, *alba*, which had been growing in the open ground for many years, was much injured. At Carclew, all the varieties seem hardy, but AZALEA *indica* itself less than the others; at this place they are grown in the shrubberies. At Spofforth A. *ind. phœnicea*

was destroyed under a verandah. A. *sinensis* was killed at Dropmore after living out for many years.

Amygdalus *pumila* against a north wall escaped at Claremont, but was destroyed at Glasgow.

Bignonia *grandiflora*, at least 30 years planted against a west wall, was killed to the ground at Claremont. This must have been one of the very first specimens of it planted out, as it was introduced only in 1800. It was not injured in the Society's Garden.

Bletia *hyacinthina* has remained uninjured in the open border at Carclew for the last three years; and although exposed during the severe frost, it was not the least affected by it, the plant having produced several fine spikes of flowers in summer.

Chinese Chrysanthemums, the whole collection was killed at Claremont, whether planted at the bottom of the walls, or in pots plunged in rotten tan. At Dropmore they were killed in the borders, but they survived in a south aspect under pales and walls.

Caprifolium *longiflorum* was saved at Spofforth in a greenhouse, where Calceolarias were killed.

Cunninghamia *sinensis* was little injured anywhere; at Claremont, where are the largest plants in England, stationed on a sloping rather sheltered hill side, it did not lose a leaf; but at Dropmore, a plant growing in a very exposed situation, was more damaged.

Clematis *chinensis* was killed to the ground in the Horticultural Society's Garden, but sprang up again vigorously.

Cydonia *sinensis* was damaged in the Horticultural Society's Garden on the open lawn.

Fraxinus *lentiscifolia* was uninjured in the Society's Garden.

Glycine *sinensis*, although in most places untouched by the frost,

had all the spurs killed back to the main branches at Redleaf, while the plant was otherwise injured.

GLEDITSCHIA *chinensis* was killed at Sketty, but the other species were uninjured.

HYDRANGEA *hortensis*. At Sketty several plants from 20 to upwards of 30 feet in circumference were all uninjured. At Glasgow the species was nearly killed.

ILLICIUM *anisatum*, plunged in a pot behind a west wall, escaped at Claremont, while 70 species of Cape and New Holland plants beside it died.

JUNIPERUS *chinensis ;* a fine specimen at Claremont, perhaps the finest in England, was not in the least hurt; nor at Belsay.

KOELREUTERIA *paniculata*, grown as a hardy shrubbery plant, was uninjured in England; but suffered at Glasgow.

MAGNOLIA *fuscata*, trained to a wall, sustained no injury at Bicton; M. *pumila* died there. M. *conspicua* seems to have been hardy everywhere.

An ORANGE tree, at Owston, of the variety called the Portogallo dolce, trained to the back wall of a peach-house, escaped, protected by a few fir branches and the upper lights only, with the thermometer down to 24° several times; after the lower lights were put on without fire, the outdoor thermometer fell to 10°, when the plant was injured, but it recovered. In Cornwall species of the genus *Citrus* survived the winter, with little or no protection. Mr. Fox's collection may be taken as an example of this. The *citron* has been trained for 10 years to a south wall, is 5 feet high, and produces "fine fruit." The *lemon*, in a south-east exposure, has lived for 17 years, is 7 feet high, and produces plenty of fruit. A plant, called the "*Citrus orange*," lives as a hardy shrub. The St. *Michael orange* has lived 23 years on a south wall, and produces an abundance of "choice fruit" annually.

Finally, the *Mandarin* Orange has been living uninjured for three years.

Pinus *sinensis*, supposed to be the only one in the country, had stood out of doors 20 years at Redleaf, was 14 or 15 feet high, and was quite killed.

Pittosporum *Tobira* was generally killed near London. At Sketty, since 1813-4, several shrubs had remained uninjured by the frost till last winter, when they did not suffer more than some common evergreens, which grew beside them, and one of them came freely into flower. Mr. Dillwyn states, that in the scale of injury it may be placed with Arbutus Unedo, and that it has suffered much less than Aristotelia Macqui. In Cornwall this is a common shrub; several plants at Carclew were split from top to bottom and killed; others had their last years shoots killed, and only a few, which happened to be protected by higher shrubs, escaped. At Falmouth it did not suffer.

Roses. Of the *Banksian* Rose, both the yellow and white variety suffered severely in all the northern parts of England; at Claremont, plants 15 years old, and covering 60 or 70 yards of wall, were killed to the ground; fine old specimens perished in the Society's Garden; at Brenchley, a plant with a stem $11\frac{1}{2}$ inches in circumference, and covering the whole side of a house, was entirely destroyed; they equally perished in Hampshire, but it was observed at Owston that one plant against a shaded wall escaped. The varieties of Rosa *multiflora* were destroyed. Rosa *bracteata*, the *Macartney Rose*, was killed back to its old wood, or even down to the ground. R. *microphylla* suffered in the same degree; other China Roses in general were killed to the ground, or totally destroyed. The white and yellow China Rose, the sweet scented hybrid, *Hamon*, and *Blairii*, were entirely destroyed even in Hampshire; but the latter was injured on a south wall at Drop-

more. Generally speaking, the *Noisette*, *Isle de Bourbon*, and *tea-scented* varieties, were found the most tender; hybrids, between the China Rose and European species, were much less affected; the beautiful ROSA *ruga*, a mule between ROSA *indica* and *arvensis* did not suffer in the least at Pitmaston, or even at Redleaf, where the *Noisette*, and every description of *China Rose*, was killed down to the ground. It was, however very different in Cornwall and South Wales; at Carclew, ROSA *involucrata* was the only Rose that suffered, while *Rosa microphylla* close beside it was uninjured. At Sketty, *Rosa microphylla* was slightly injured, but at that place no other of a large collection was at all injured. At Penllargare R. *microphylla* against a wall was quite unhurt. R. *sinica* perished on a south wall in the Society's Garden.

PÆONIA *Moutan* and *papaveracea* did not suffer at all in the south of England, nor even at Claremont in various exposed situations, or Glasgow, though unprotected; but at Redleaf three dozen large plants were so much injured, that it was necessary to cut them down to the ground; and I learn from Mr. HERBERT that they were equally damaged at Ickleton, in Cambridgeshire. In some places, as at Sketty, the tree pæonies flowered better than was ever remembered.

PHOTINIA *serrulata*, or Cratægus glabra, was uninjured at Carclew, and at Singleton; but it suffered a little at Sketty, and in the midland and northern counties was either entirely destroyed or very much injured; it was observed at Dropmore, that where most sheltered it suffered most; an old plant on a south wall in the Society's Garden was nearly killed.

PODOCARPUS *macrophyllus* was killed at Carclew, at Redleaf, and elsewhere.

RAPHIOLEPIS *indica* was killed at Liverpool. It never bears even mild winters well, in the Society's Garden.

THEA *viridis* in a sheltered spot at Claremont escaped, but both it

and *Bohea* were killed at Redleaf. T. *viridis* was uninjured at Bicton.

TAXODIUM *sinense* proved hardy in the Society's Garden.

NEW ZEALAND.

CLIANTHUS *puniceus* was generally destroyed; at Bicton, a plant against a wall, and 9 feet high, is reported to have been killed; even in the Glasnevin garden, although protected, it died; but it lived at Binstead, in the Isle of Wight, and at Somerford, near Wolverhampton.

EDWARDSIA *microphylla*, of which fine specimens against walls existed in the Society's Garden, at Arundel, and elsewhere, was generally killed; but at Bicton and Carclew, at the latter place in the open shrubbery, it was not at all affected. E. *grandiflora* died at Dropmore, and in the Society's Garden, where there was a very large plant, and even at Bicton; but it was undamaged at Carclew, at Belsay on the outside wall of a conservatory, and Singleton, and it survived, though much damaged, at Owston. At Sketty a standard was killed, but those against a wall were uninjured, and one of the latter at Penrice Castle, unprotected, flowered beautifully after the winter. E. *chrysophylla* was killed on a south wall in the Society's Garden, and at Bicton, but it was only killed to the old wood at Claremont.

FUCHSIA *excorticata* survived at Bicton; at Carclew it was killed to the ground, but shot up again.

PHORMIUM *tenax* was killed near London, at Cambridge, in Hampshire, and elsewhere; but at Carclew, in the shrubbery, under some large Scotch firs, and by the edge of a pond, in a kind of swamp, where its roots were under water, this plant was not in the least injured.

WEST INDIES.

ADELIA *acidoton*, a Jamaica plant, was killed to the ground in the Society's Garden, but sprang up again.

HAMELIA *patens*, a plant of which had stood out for seven years at Claremont, was killed.

JAPAN.

ACER *palmatum* perished in the Society's Garden, where unprotected; but it survived in a cold frame.

AUCUBA *japonica* was killed at Claremont, and other places, and much injured in some parts of the midland counties; its leaves were only discoloured in the Society's Garden, it scarcely suffered at Glasgow, and not at all at Belsay and Spofforth.

BROUSSONETIA *papyrifera* was but slightly injured in the Society's Garden, and proved hardy in most cases.

CLEMATIS *Sieboldi* and *cærulea* were generally found unhurt.

CAMELLIA *japonica*, though generally killed, escaped in many places without injury. This plant has stood out for 18 years at Somerford. Mr. DILLWYN reports, that at Penrice Castle, a large standard, though only planted out from a conservatory the previous year, flowered after the winter. At Dropmore, a plant of the variegated variety has lived out for several years in rather a sheltered situation. In the open shrubbery at Singleton, at Carclew, and even in the garden of Mr. HARRISON, of Cheshunt, many varieties survived without injury; but they were killed, or so severely injured, as not to be worth preserving at Claremont, at Norwich, and at Owston. At Redleaf, large plants which had stood 14 years, were quite destroyed. At Spofforth, a strong plant of Middlemist's

Camellia, upon an upper limb of which had been inarched a branch of a double white Spofforth Seedling, stood against the wall, and the result is that not a single leaf, nor a live bud of Middlemist's Camellia remains on the plant; but the limb of the white seedling is not essentially hurt, having green leaves and fresh looking buds.* At North Stoneham, the Camellia myrtifolia, double red, and Waratah, all out, and standards, stood well with protection. The double white, single red, striped double red, and Pompone, against a south wall, with protection, were in no way injured.

Cydonia *japonica* was uninjured in some gardens near London, but in others it was killed to the ground. At Redleaf, some of the dwarfs, as well as the large standards, were very much cut.

Chimonanthus *fragrans* was killed at Rolleston; I have no such report from any other station.

Caprifolium *japonicum* was killed to the ground at Dropmore, under a south wall, but it broke vigorously from the root after Midsummer. In the Society's Garden, it was killed in the same situation. C. *flexuosum* was also injured, but it broke again well.

Deutzia *scabra* appeared quite hardy everywhere, except at Glasgow, where it was almost killed.

Eriobotrya *japonica* was killed almost everywhere in the midland

* There is a great difference in the constitution of different seedling Camellias; some only will bear forcing, and it appears that some can endure severer cold than others. They should, therefore, be all tried in the open ground, and it should be ascertained which is the hardiest stock to graft upon. In like manner Rh. arboreum should not be inarched on ponticum, (which is tenderer than the American species, and will not swell to the bulk of arboreum which overgrows it), but upon the Pennsylvanian arborescens, which grows to a very great diameter in America, where there are trees of it, which might at the lower part be sawed into planks.—*W. Herbert.*

and northern counties, although some specimens had been out many years, and even of large size, and this, whether protected or exposed, and both on north, south, and west walls; it was only slightly injured in South Wales, and escaped unhurt at Carclew; and, which is remarkable, almost without damage at Owston.

EUONYMUS *japonicus* was but little hurt against a wall in the Society's Garden.

KERRIA *japonica* was found quite safe in various situations.

NANDINA *domestica* lived, protected with a mat, at Abbotsbury.

SOPHORA *japonica* generally suffered no injury, but at Sketty it is reported to have been killed.

LIGUSTRUM *lucidum* was generally killed; it was however only a little hurt at Sketty, and not at all at Carclew, or in Dublin; at the latter place it has lived without injury since the year 1812.

RHUS *succedaneum* was killed on a south wall in the Society's Garden.

LAURUS *camphora* was killed in the Isle of Wight, and in Mr. GARNIER's garden at Bishopstoke, in Hampshire; but it lived at Kilkenny on a southern and protected aspect.

SALISBURIA *adiantifolia* sustained no damage anywhere.

NORTH AMERICA; excluding CALIFORNIA and MEXICO.

ASIMINA *triloba* stood, without protection, in the Society's Garden.

ANONA *glabra* was much injured in the Society's Garden.

AZALEA. Some of the scarlet American varieties were nearly killed at Spofforth, and a small white kind also suffered severely at the same place. But A. *calendulacea* was not in the least affected.

ARALIA *spinosa*, 10 feet high, lost the extremity of the shoots only, at Norwich.

Abies *Douglasii* had its leaves turned yellow at Belsay, but it does not appear to have been seriously injured. A. *Menziesii* proved hardy in the Society's Garden.

Andromeda *arborea*, and even *polifolia*, were killed in the Society's Garden. A. *floribunda* proved every where quite hardy, even at Worksop.

Arbutus *procera* was uninjured against a west wall in the Garden of the Society; it was more injured at Carclew, where it is planted as a standard in the shrubbery; and at Brenchley, a fine plant, with a stem 14 inches in circumference, was destroyed. At Sketty it suffered very little.

Bignonia *capreolata* was only a little injured on a south wall in the Society's Garden; in a similar situation at Spofforth it suffered severely.

Berberis *Aquifolium*, *repens*, and *glumacea*, sustained no injury anywhere; *fascicularis* was killed at Brenchley, Woburn, Rolleston, and Redleaf, but it escaped at Singleton, and Carclew. In the Society's Garden it was killed nearly to the ground, in the open border, and much injured against a south wall.

Ceanothus *americanus*, and Cissus *stans*, were killed to the ground in the Society's Garden, but shot up again. At Rolleston, the former was destroyed.

Cerasus *caroliniana*, killed in the Society's Garden, was unhurt at Sketty.

Ceratiola *ericoides* sustained no injury in the Society's Garden.

Clethra *alnifolia* appeared at Sketty to be much injured, but broke into leaf and flower, nearly as usual, both there and at Penllargare.

Cratægus *microcarpa* was much injured in the Society's Garden.

Cactaceæ. A hardy variety of *Opuntia*, under a hand-glass, occasionally covered with a mat, was found safe at Owston. *Opuntia ferox* was not at all injured at the foot of a south wall at Norwich; nor at Dropmore. At Spofforth, a Chilian

species, against the front wall of a greenhouse, protected by a sloping slate, was uninjured; the same species in an open border had been killed in October.

DIOSPYRUS *virginica* was not injured in the Society's Garden or at Sketty; at Rolleston it was injured but not killed.

FRAXINUS *americana* and the other American species, were greatly damaged in the Society's Garden; but did not suffer at Owston.

GARRYA *elliptica* was much injured in the Society's Garden, but at Liverpool and elsewhere it escaped.

HALESIA *diptera* was killed in the Society's Garden. It was unhurt at Spofforth.

ILEX *opaca* and *vomitoria* were little injured in the open lawn at Claremont, very near to where the *Common Holly* suffered; but *vomitoria* was killed at Singleton and Sketty, while *opaca*, *Perado*, *balearica* and *prinoides*, were scarcely affected by the cold in those places; the latter, however, was cut to the ground at Glasgow.

ILLICIUM *floridanum* survived at Claremont; it has stood out at Walton for many years, and also in the Mile End Nursery; and at Stoneham Park has lived as a grass plant for at least ten years.

LUPINUS *arboreus* was killed in the Society's Garden, and at Sketty, though against a wall and uninjured by the winters of 1813-14 and 1836-7.

MAGNOLIA *grandiflora* stood without injury in a great many situations, both protected and against walls; without material injury under the latter circumstances, even as far north as Doncaster; it, however, in most cases partially lost its leaves, in some cases entirely; and at Tooting, near London, a plant 25 years old was totally destroyed. At Owston, it was observed that the Exeter variety, about three feet from a wall, was uninjured, while the common sort suffered great damage. The deciduous American species generally escaped without injury, but

not everywhere. M. *glauca*, which had stood out at Spofforth for 23 years, had all its buds and small branches killed; it sustained no damage about London, where the cold was far more severe. At Glasgow, the only species which did not suffer was M. *acuminata*.

Pinus *palustris* was killed in several places, and much injured in others, although protected; but at Dropmore and Brenchley it was not much damaged; it was unhurt at Carclew. P. *mitis* 15 feet high was killed at Dropmore. P. *ponderosa* proved hardy everywhere. P. *Sabiniana* is reported safe everywhere except at Chipstead in Kent where it was killed, and at Belsay, where it was uninjured; I should however remark, that P. *macrocarpa* and P. *Sabiniana* have been mixed in the gardens under the same name, and as the latter is reported from Rolleston to be killed, it is not improbable that it is the same plant which under the name of *Sabiniana* has suffered elsewhere. In the Society's Garden, neither were injured. P. *leiophylla* proves too tender for England.

Pyrus *angustifolia* was killed in the Society's Garden, and suffered much elsewhere.

Pontederia *cordata*, and P. *angustifolia*, lost the stems and leaves above water at Carclew, but the roots of both were unhurt and grew again.

Quercus *Phellos*, and its varieties, were uninjured in the Society's Garden.

Rhododendron. No American species suffered materially anywhere.

Sideroxylon *lycioides* was only slightly injured in the Society's Garden.

Vaccinium *ovatum*, a very beautiful evergreen, was not the least affected anywhere.

Schizandra *coccinea* was killed in the Society's Garden on a south wall.

STYRAX *grandifolium* was killed in the Society's Garden, and the other species were much injured there.

YUCCA. The species generally stood in most places without any injury, even as far north as Doncaster; but at Redleaf many large plants of YUCCA *gloriosa* were cut down to the ground. At Spofforth, the species suffered capriciously; some plants being killed to the ground, and others of the same species unharmed. Y. *recurva* was not hurt, though the stem of a plant of that species, about 4 inches diameter, was destroyed near the ground at Mitcham in Surrey in 1814. Y. *gracilis* was killed in the Society's Garden and at Liverpool; but it sustained no damage at Sketty.

VIBURNUM *cassinoides* was much injured in the Society's Garden.

HIMALAYA MOUNTAINS.

ABIES *Deodara* is reported by everybody to be quite hardy. At Worksop Manor it was not even browned so much as the Cedar of Lebanon. At Dropmore, there is a specimen inarched on the larch, and planted out for 3 years in a very exposed part of the grounds, where it is growing with great vigour. A. *Webbiana* lost its leaves at Redleaf; was, in one case, killed back to the old wood at Dropmore, otherwise uninjured; was damaged beyond recovery in the Society's Garden: one large plant at the latter place was killed outright. In Cornwall and Devon, it seems as hardy and valuable as the silver fir. The plant at Carclew has never been the least affected by cold. In the garden of the Rev. J. GARNIER, at Bishopstoke, in Hampshire, there is a plant from 10 to 12 feet high, which has even produced cones. It has never been protected, and is in perfect health. Sir OSWALD MOSLEY also reports it uninjured at Rolleston; at Belsay, A. *Mo-*

rinda, which is reported safe in other stations, was also damaged.

ACER *oblongum* was killed on a south wall in the Society's Garden. This species has always been found tender.

ANAGYRIS *indica* was killed in several places; but little injured at Claremont, against a west wall, and perfectly safe at Carclew.

ANEMONE *vitifolia*, and several other rather tender plants of this order, were uninjured at Sketty and Spofforth.

BENTHAMIA *fragifera* generally perished in the North; at Belsay Castle and Woburn, it is reported as pushing from the root; at Sketty and Penllargare, in South Wales, and at Carclew, where it is planted in the woods and promises to be a fine underwood shrub, it only lost its leaves. It also lived at North Stoneham.

BERBERIS *aristata*, and *asiatica*, had their leaves destroyed generally, and in some cases their new shoots, but they did not otherwise suffer. In the Society's Garden, B. *aristata* was injured in a peat bed, but not where planted in common soil.

CLEMATIS *montana* proved hardy everywhere against walls.

COLUTEA *nepalensis* survived everywhere.

COTONEASTER *microphylla* was much injured, but not killed in any place; C. *affinis* died at Norwich to within 6 inches of the graft, but was unhurt in Cornwall; in the Society's Garden, C. *affinis*, *frigida*, *microphylla*, and *lævis*, were greatly damaged, while C. *rotundifolia*, *nummularia*, and *acuminata*, suffered comparatively little.

DESMODIUM *nutans* was killed upon a south wall in the Society's Garden, after having survived 6 or 7 previous winters.

EUONYMUS *echinatus*, and *sarmentosus*, were killed to the ground at Liverpool, but E. *Hamiltonianus* did not suffer at that place; the latter was killed to the ground in the Society's Garden, but sprang up again with vigour.

HIPPOPHAE *conferta* was uninjured at Sketty, and in the Society's Garden.

HOVENIA *acerba*, of which a fine old plant existed on a south wall in the Society's Garden, was killed to the ground, but shot up again weakly.

JUNIPERUS *recurva*, a beautiful species, was uninjured everywhere.

JASMINUM *revolutum* was killed in the Society's Garden; the plant was of large size, and had stood 8 or 10 winters; it was scarcely injured at Owston against a wall, and not at all at Sketty. J. *Wallichianum* was cut to the ground at Spofforth, and Liverpool, but in the Society's Garden, it was damaged against a south wall and in the open border was killed to the ground. J. *heterophyllum* was killed to the ground on a south wall in the Society's Garden, but sprang up again.

PINUS *excelsa* was uninjured everywhere. P. *longifolia* died everywhere, however much protected, except at Carclew, where it has been exposed for several years, and seems quite hardy.

LAGERSTRŒMIA *indica*, trained to a south wall, was killed to the ground in the Society's Garden, but sprang up again.

LEYCESTERIA *formosa* sustained no injury in the Society's Garden and at Glasgow.

PYRUS *variolosa* was killed at Norwich, and in the Society's Garden, in the open ground; but not against a wall. P. *vestita* was unaffected by the cold.

RHODODENDRON *arboreum*. The red variety was killed near London, at Sketty, at Stoneham in Hampshire, at Owston, where it had been newly planted, was nearly killed at Singleton, was untouched at Carclew. R. *arboreum album* was uninjured at Sketty, but killed at Stoneham, and destroyed to the ground at Dropmore. Of the hybrid varieties, *Smithii* and another were a little injured at Singleton, more at Woburn, Spofforth, and Norwich, and still more at Stoneham. In the Society's

Garden they were all, without exception, killed to the ground, but shot up again from the root. The variety called *Nobleanum* was uninjured at Norwich. Mr. WALKER found that the hybrids between R. *arboreum* and R. *Catawbiense* or *caucasicum* stood well at Calderstone, so did R. *altaclerense*. Mr. JOHN WILSON states that at Osberton in Nottinghamshire, where the thermometer fell to 2° *below* zero, the hybrid rhododendrons, of which there is an extensive collection, although much injured, all recovered and pushed forth new buds vigorously. In Mr. GARNIER's garden, at Bishopstoke in Hampshire, R. *Smithii* and some others lost their leaves or became a little brown; but the Highclere hybrids stood perfectly well. With regard to the hybrids, and Indian species, Mr. HERBERT's observations at Spofforth are as follow;—"My seedling RHODODENDRONS from *arboreum* by the rose-coloured *ponticum* have not lost the foreright shoots, though the leaf is damaged, answering in that respect my expectations, that they would approximate to the constitution of the hardier male. R. *altaclerense*, from *Catawbiense-ponticum* by *arboreum*, is disfigured in some situations, and scarcely touched in others, but the foreright buds and flower-buds were unhurt. R. *Lindsayi* from the American *arborescens*, (*maximum* var. *purpureum* of Pursh,) is not much injured. A plant of it taken up to be forced, after the severest night, when the snow was melting, flowered splendidly and its leaves were unhurt. R. *Haylocki*, from *Catawbiense* by *arboreum*, has received no injury, and bids fair to flower profusely. R. *Knightii*, from the rose-coloured cinnamon leaved *arboreum* by *caucasicum*, is uninjured, and now (April 26th) in flower. R. *Acklandi*, from *altaclerense* crossed again by the scarlet *arboreum*, is killed near to the ground, those from *Haylocki*, by *arboreum*, the same. The scarlet *arboreum*, against the front wall of the stable covered loosely with a single mat, was killed nearly

to the ground, but, having been taken up in March, it sprouted from the bottom in the stove, but died soon after. The white cinnamon-leaved variety, (which has stood 12 years in the middle of the garden unprotected, and formed a large, round, close-leaved bush,) is killed to the ground, and it is doubtful whether it will push up again: it measured 18 inches round close to the ground, and its principal branch was 3 inches diameter. It stood in a peaty compost, and the plant of *altaclerense* touching it is more damaged than any of the same cross. I believe that in a drier soil the *cinnamon-leaved* RHODODENDRON, whether white or rose-coloured, would have escaped, for another plant of the white, inarched on a *pontico-catawbiense* stock, and planted out only last summer, but growing in the natural barley-soil of the garden, against a stone (east) wall, and covered with an old single mat full of holes, is quite unhurt, and shooting early, which makes it very liable to be cut by spring frosts. The mules from R. *arboreum* by the white *maximum*, and from the latter by R. *arboreum* were not the least hurt." R. *anthopogon* died at Somerford; R. *campanulatum*, without any shelter, bore a temperature of 5° below zero at Highclere. At Spofforth the the *deciduous* R. *davuricum* was killed, the *evergreen* variety flowered more abundantly than usual.

RHEUM *Emodi* survived everywhere.

RHUS *juglandifolium* was killed to the ground in the Society's Garden, where it had been growing unprotected for several years.

RIBES *glaciale* lived in the Society's Garden; and at Abbotsbury.

SPIRÆA *argentea* lost only the points of its shoots at Brenchley, and in a very bleak situation at Redleaf. The other Nepal species all proved hardy.

STRANVESIA *glaucescens* was killed everywhere; in the Garden of

the Society, on a south wall, after having flourished there for 7 or 8 years.

VIBURNUM *cotinifolium* proved hardy in the Society's Garden.

CAPE OF GOOD HOPE.

APONOGETON *distachyon* proves at Carclew one of the most delicate as well as fragrant aquatics, and flowers all the year. During the severest weather it remained unhurt, although encrusted with ice. Seeds of it were sent by Sir C. Lemon, in a letter from Edinburgh, several years ago; they were enclosed in a bit of *oiled silk*, and after being received were put into a lump of clay and dropped near the edge of the pond, where they vegetated and have grown ever since.

AMARYLLIDACEOUS plants, although generally destroyed, escaped in some places; even at Claremont, AMARYLLIS *Belladonna, vittata, crocata, psittacina, formosissima,* and several others, were uninjured. CRINUM *capense*, at the edge of a pond escaped injury at Carclew, as also did NERINE *undulata* at the same station. But at Sketty they were mostly killed, and not one of them flowered in the succeeding summer. A mule Nerine, with the bulbs *above ground*, was uninjured at Spofforth.

Of GLADIOLUS and IXIA, many species only covered with about an inch of rotten fern, survived at Claremont; GLADIOLUS *psittacinus* at Carclew. All the mule GLADIOLI, SPARAXIS *pendula,* which were covered with leaves, together with WATSONIA *Mariana*, and GLADIOLUS *psittacinus*, which were unprotected, were unharmed at Spofforth. Mr. HERBERT considers the latter to be as hardy as a crocus, but impatient of a hot summer. But, on the other hand, at Glasgow, most

kinds of Cape bulbs suffered, or perished, although in a cold frame covered with mats.

ANOMATHECA *cruenta*. A small bed of this beautiful plant was in front of the greenhouse at Carclew ; it was supposed to be dead, but was left undisturbed, and again made its appearance after the winter.

ALBUCA *major* and *minor*, EUCOMIS *punctata*, TRITONIA *uvaria*, *pumila*, and *media*, survived in a border at Claremont, protected by a thin covering of fern.

OXALIS, 20 species in a border, with the tuberous PELARGONIUMS hereafter noticed, stood well at Claremont. O. *Bowiei* was killed at Dropmore.

CACALIA *Kleinii*, an old plant, which had stood out for several years, was killed at Sketty.

DIOSMA *amœna*, trained against the front of the greenhouse at Carclew, was partly killed; the leaves were unhurt on some of the branches.

ECHIUM *giganteum* survived at Binstead, in the Isle of Wight, in high and dry situations; but it died in low grounds.

HALLERIA *lucida*, trained against the front wall of the stove at Carclew, was very little hurt; its young shoots, and those which projected from the wall, were killed, but it broke again very strong. In Mr. Fox's Garden at Falmouth it grows freely as a shrub.

LYCIUM *afrum*. This plant survived at Carclew on an east wall, while CARMICHAELIA *australis* on one side of it, and ESCALONIA *glandulosa* on the other, were hurt.

MYRSINE *africana*, which had stood 23 years against the front wall of the stables at Spofforth, having been planted out in 1815, was as much injured as it was when the glass fell to 10° many years ago, but it was not killed ; one branch however alone remained with green leaves, and the rest were dead.

MESEMBRYANTHEMUMS, which, usually survive the Cornish winters, and flower freely during summer, were all killed at Carclew.

OLEA *fragrans* was killed against a south wall at Norwich; slightly injured at Carclew.

ORNITHOGALUM *caudatum*, with the bulb above ground, was injured but survived at Spofforth.

PELARGONIUM *flavum*, *triste*, *lobatum*, had been planted at Claremont in a warm border for seven years, and all survived unhurt, though only covered with rotten fern to the depth of an inch, or thereabouts; there were also several other tuberous rooted species uninjured. Mr. M^{c} INTOSH finds, that planting out is the best way to grow all this tribe, as well as most bulbs, which are not evergreen, or retain their leaves. P. *triste* lived unprotected at Abbotsbury. A large plant of the ivy-leaved Pelargonium, 16 or 17 years old, was killed in a conservatory at Spofforth.

RICHARDIA *africana*, or *Calla æthiopica*, with its stem two inches deep in the pond, was killed at Sketty, though it received no material injury from the preceding winter. At Cheshunt, Mr. HARRISON has had two large plants in a pond for nine years, without either care, or protection; they bloom every year, and were not in the least affected by this frost. The plant proved equally hardy at Carclew, both at the edge of a pond, and in the open border.

TRITOMA *media* was killed at Spofforth; T. *Burchelliana* was unhurt.

TEUCRIUM *fruticans*. This pretty free flowering evergreen shrub, nailed to the front of the greenhouse at Carclew, was only killed back to the old wood.

ERICA. Of all the Cape species, which had been turned out in the open ground, the only species which are returned as having survived, at Carclew, are E. *concinna* and *gracilis*, where they were protected by a covering of mats. At Fal-

mouth, in Mr. Fox's garden E. *verticillata, colorans, gracilis, baccans* and *favoides* were killed, but E. *flammea, tubiflora, lævis* and *abietina* stood the frost.

ERIOCEPHALUS *africanus*, MURALTIA *mixta*, ŒDERA *prolifera*, POLYGALA *latifolia, myrtifolia, grandiflora, speciosa*, PSORALEA *pinnata*, and STRUTHIOLA *erecta*, all died in Mr. Fox's Falmouth Garden.

ARCTOTIS *aureola* and *maculata*, BRUNIA *ericoides*, GAZANIA *rigens*, GNIDIA *simplex* and *flava*, HERMANNIA *plicata, hirsuta* and *flammea*, LEONOTIS *Leonurus*, MELIANTHUS *major*, PENTZIA *flabelliformis*, PLUMBAGO *capensis*, SALVIA *aurea*, SPARMANNIA *africana*, STRUTHIOLA *ovata*, all lived without injury at Falmouth, in Mr. Fox's garden.

SOUTH of EUROPE, LEVANT, and NORTH of AFRICA, with adjacent islands.

AMYGDALUS *orientalis* was killed in the garden of the Society, but escaped at Cambridge.

ARISTOLOCHIA *sempervirens* was uninjured at Cambridge.

ARBUTUS *Unedo*. This tree was affected very differently in different places; in the warm gardens in the midland counties, especially about London, it was either destroyed, or nearly so, but at Owston, and elsewhere in the north, and at Sevenoaks, where the cold was particularly intense, it was uninjured; at Sketty, every plant which was exposed to the east, suffered severely, and many were killed; at Claremont, trees, 25 feet high and 2 feet in circumference, were entirely destroyed. In the Society's Garden every specimen perished, either wholly, or as far as the ground, but a hybrid variety between this species and A. *Andrachne* escaped unhurt, both in the latter place, at North Stoneham, and at Sketty. A. *Andrachne*

was killed in the midland and northern counties, but not in the southern; at Dropmore, a plant growing against a south wall, was found quite dead; but Mr. Forbes reports from Woburn, that his plant is only injured at the extremity of the young shoots. In the Society's Garden, and at Owston, this species would not have died had not the stock of Arbutus Unedo, upon which it was grafted, been killed.

Asparagus *scandens* was killed to the ground in the garden of the Society, but pushed up again vigorously.

Atriplex *portulacoides*, a British plant, was killed in the Society's Garden.

Buxus *balearica* was uninjured at Sketty, at Penllargare, at Owston, and about London.

Bumelia *tenax* was killed in the Society's Garden; but not injured at Abbotsbury.

Bupleurum *fruticosum* was scarcely affected near London, and to the south, but at Cambridge it was killed, and it is well known to be a tender plant in the midland counties. At Owston it was much injured.

Cistuses were killed in almost all places, with the exception of the *gum cistus*, which occasionally escaped; in the Society's Garden the whole collection, among which were many plants 8 or 10 years old, were destroyed. C. *laurifolius* was uninjured at Spofforth; at Singleton, Mr. Vivian lost all but *laurifolius* and *corboriensis*; at Sketty, *laurifolius* was the only species that remained entirely unhurt, and next to that species *corboriensis* was least injured; at Abbotsbury C. *salvifolius* and *purpureus* perished, but C. *villosus*, *laurifolius*, *cyprius*, and *creticus* were uninjured; in Norfolk, in Hampshire, in Kent, and the neighbouring counties, the collections of this genus were almost annihilated.

Celtis *orientalis* was killed on a south wall in the Society's Garden, where it had lived many years.

CLETHRA *arborea* had stood for several years in the shrubbery at Carclew, but was very much injured this year.

CLEMATIS *cirrhosa* was killed on an east wall in the Society's Garden.

CERCIS *Siliquastrum* was uninjured, or very little affected, anywhere.

CYTISUS *æolicus*, and *Weldeni*, lived at Abbotsbury; but the former was a little hurt.

CERATONIA *Siliqua* was uninjured at Owston, in a cold peach house, with only the upper lights till the middle of January; the leaflets and shoots of last year were killed at Carclew.

CHENOPODIUM *fruticosum*, a British species, was killed to the ground at Cambridge, and near London.

CONVOLVULUS *althæoides*, and *bryoniæfolius*, were uninjured at Cambridge. *Cneorum* stood without damage at Abbotsbury.

CUPRESSUS *sempervirens*, which was generally killed about London, was not affected at Owston. At Belsay, young plants were mostly killed, but two old ones, 16 or 18 feet high, escaped. C. *lusitanica* was also killed in most places, except Cornwall and Devonshire.

CNEORUM *tricoccum* died at Cambridge.

CHAMÆROPS *humilis* survived the winter in the Glasnevin Garden, but was killed in that of the Society.

CYNARA *horrida* was killed at Cambridge, together with C. *Scolymus*, the *common artichoke*, which was lost in almost all the gardens in the midland and northern counties, if unprotected by litter.

DIANTHUS. The *Samian tree pink*, which had remained at Spofforth since it was raised from seed, about 20 years ago, in a pot of pure sand in the most exposed corner of the greenhouse, touching the front and side glass, was killed.

CORONILLA *glauca*, which survives the winters readily in Cornwall and South Wales, where it is cultivated as a common border shrub, and flowers abundantly during the winter months, was

either destroyed, or very much injured. It perished at Spofforth under a verandah.

Dorycnium *hirsutum* perished in the Society's Garden.

Daphne *Laureola,* a British plant, was much injured in the Society's Garden, *Cneorum* suffered a little; all the others died. But D. *pontica* sustained no damage at Liverpool, or Spofforth; although it was damaged at Dropmore. At Sketty and Penllargare none of the species were at all affected. D. *australis* stood at Abbotsbury.

Diospyrus *Lotus* was much injured in the Society's Garden.

Euphorbia *mellifera* proved quite hardy, and untouched, at Carclew. E. *pithyusa, veneta,* and *rigida,* lived at Abbotsbury.

Erica. The collections of hardy *heaths* suffered great loss. After the frost of the 20th, the bushes were found shivered to pieces, as if they had received a discharge of small shot; excepting in the south, they were either destroyed or killed to the ground; even E. *vagans,* the *Cornish heath,* must be included in this list. E. *australis,* however, suffered but little at Brenchley, and stood undamaged at Carclew, Abbotsbury, and Liverpool, but it perished in most other places. Large bushes of E. *mediterranea,* in the shrubbery at Calderstone, were very much broken and disfigured by the snow, but none of them were killed. At Sketty, large plants of *mediterranea* in exposed situations suffered greatly, but *stricta* escaped without material damage. E. *arborea* was killed to the ground at Woburn, but remained unhurt at Abbotsbury, Penrice, Penllargare, and some other places in the neighbourhood. E. *scoparia* escaped at Spofforth, and *umbellata* at Abbotsbury.

Figs, unless against walls, were killed to the ground in all the midland and northern counties, but experienced no injury in Devon and Cornwall. Plants, 10 or 12 years old, were killed to the ground at Belsay, in the same situation with a plant of the scarlet variety of *Arbutus Unedo,* which was unhurt.

At Arundel two varieties of figs are cultivated as open standards, the effects upon which by frost was very remarkable. The green Ischia, which is that principally cultivated, was so slightly injured that the trees produced an average crop of fruit last autumn. One tree of this variety is of the following unusual size; height $26\frac{1}{2}$ feet, branches $34\frac{1}{2}$ feet in extent, girth of stem at the surface 9 feet, where it divides into three, each measuring in circumference 2 feet 9 inches. The other, a purple variety, growing under exactly the same circumstances, was so severely damaged that almost all the trees of it were cut down; they again pushed forth shoots, but none produced anything like a crop of fruit.

FONTANESIA *phillyræoides* was killed down to the ground in the Society's Garden, and hardly recovered.

GENISTA *triquetra* which had stood 20 years at Spofforth was killed; it was much injured in the Society's Garden, as well as most of the other species. At Dropmore the plants growing in the woods among heath were little injured, while others in pots covered with mats were killed. At Belsay Castle they did not sustain any injury.

HABLITZIA *tamoides* was killed to the ground at Glasgow, but afterwards quite recovered.

HIBISCUS *syriacus* suffered severely in the Society's Garden; but not at Owston.

HYPERICUM *hircinum* was killed to the ground at Cambridge.

ILEX *balearica* was not in the least hurt about London.

JASMINUM *officinale*, trained to a south wall, and of many years growth, was killed to the ground in St. James's Square, in London, and at Dropmore under a south wall; but it was unhurt at Spofforth. Both it, J. *fruticans*, and *humile*, shared the same fate in the Society's Garden. But none of these three species received any injury at Sketty.

JUNIPERUS *macrocarpa* was killed at Sketty, and another species

materially injured; *phœnicea* had been killed by the preceding winter; *lycia* was damaged in the Society's Garden, but *oxycedrus* was unharmed there.

LAVANDULA *Spica* was killed in the Society's Garden.

LAURUSTINUSES in those places where the cold was very severe, were found to suffer in proportion to the shelter they experienced; in the warm gardens about London, and in other protected situations, they were generally destroyed; but at Owston they escaped in shaded situations against walls; and at Claremont, Mr. M^{c} INTOSH reports, that they were killed to the surface, except where they were stunted, and growing in cold late situations, not influenced by the sun. At Sketty, where the winter was comparatively mild, some of these plants in eastern exposures were injured, and others, in sheltered situations, continued to flower unhurt. At Hitcham in Suffolk they were little injured.

LAURELS. As is usual, the *common laurel* suffered more than the *Portugal,* and in some low situations was completely killed to the ground, but neither appear to have materially suffered anywhere; at Sketty, they were both observed to have lost their leaves to a far greater extent than was ever before seen. Upon the subject of the *common laurel,* Mr. M^{c} INTOSH observes, that in some parts of the ground at Claremont, whole banks of them were killed to the surface, whilst others harldly lost a leaf; this he observed on dry sheltered banks, as well as in more exposed places, and even by the banks of ponds, and where they all appeared alike healthy; wherever a current of air existed, they suffered most; those planted, (perhaps to the number of 10,000,) in autumn, stood as follows, viz. those planted in September and beginning of October, which had begun to grow, were very much cut up, those planted from the beginning of November to Christmas nearly escaped. Some trees, 25 feet high and 6 or

8 inches in diameter, that had come into bud in December, were quite killed. Both kinds of laurel were uninjured at Spofforth, notwithstanding the dampness of the situation, which is not congenial to them.

LAURUS *nobilis* was generally killed about London. At Claremont, trees 25 feet high, were all destroyed to the surface of the ground, or entirely. But at Dropmore, a large plant 20 feet high, with branches spreading 15 feet horizontally, which was to all appearance quite dead in the early part of summer, produced young shoots very near the top, and seems likely to recover in the course of next season. Professor HENSLOW mentions a fine plant in a garden at Ely having sustained very little injury; and even at Cambridge although plants were damaged the mischief was not serious. At Spofforth some branches were killed, some not. At Sketty, the leaves were less injured than those of the common laurel; this species flourishes remarkably in that neighbourhood; Mr. DILLWYN mentions a noble specimen of it, in the garden at Margam, (a mansion of Mr. TALBOT's, near the sea, about 14 miles distant from Sketty,) which, on being accurately measured about two years ago, was found to be 61 feet 6 inches high; but it was considerably injured by this winter.

LINUM *flavum*, against a south wall, was not injured at Norwich, nor at Spofforth in the open border. Of L. *tauricum*, grown upon a rock at Dropmore, some survived, but others were killed.

MELIA *Azedarach* was injured at Owston, but not severely.

MEDICAGO *arborea* was killed both at London, and Sketty, though in a very sheltered spot in the latter place.

MORUS *alba*, and its varieties, were much damaged in the Society's Garden.

MYRTUS *communis*, which survives the winter without difficulty about London, perished this year; it was much disfigured at Carclew, and destroyed in most other places, but Mr. DILLWYN

observed, that the broad leaved variety, in no part of his grounds, was more injured than some of the common evergreens which grew by its side, and till last winter it had hardly suffered at all since the winter of 1813-14; the small leaved variety, which never appeared to be equally hardy, was, however, killed, or nearly so. At Owston all the bushes were killed down, but shot up again.

Nerium *Oleander*. Of two plants, which had thriven without protection since 1834, one was killed by the winter of 1836-7, and the other last winter, at Sketty.

Olive. Of the common cultivated kind, almost every specimen was killed to the ground, or more frequently wholly destroyed in England; even in the warm garden of Abbotsbury, in Dorsetshire, this occurred, but in the garden of the Society, a hardy variety, obtained from Nikita in the Crimea, through the good offices of Mr. Buckatzsch of Guben, sustained no injury. *Olea europæa*, var. *buxifolia* is also reported by Mr. Dillwyn to have survived without protection at Penrice Castle, without having been injured.

Narcissus (Corbularia) *serotinus*, in a dry border at Spofforth, had pushed its leaves before the frost, and they remained unhurt; none of the species belonging to the *Daffodil* section were touched; but those of the *Hermione* section, from Italy and Malta, suffered very much.

Paliurus *aculeatus* had its branches much injured at Cambridge, but is not mentioned in any other of the reports as having suffered; except at Glasgow.

Phillyreas. Of the species of this genus the *oleifolia*, *rosmarinifolia*, and other entire leaved species, proved most delicate; the serrated kinds lived as far north as Owston. At Claremont, P. *latifolia* hardly suffered at all, and, in the Society's garden, this species and P. *obliqua* proved perfectly hardy.

Pinus. The only European species of this genus which sus-

tained any injury, was P. *halepensis ;* in the Society's Garden, a fine old specimen 15 feet high, originally presented to the collection by Sir CHARLES MONCK, Bart., was entirely destroyed ; but at Belsay Castle this species, in a high and dry situation, was not injured. P. *Brutia,* a species very near P. *halepensis,* stood without protection in the Society's Garden. At Dropmore, P. *canariensis,* was much injured, but its trunk and old branches were saved, owing, as it is supposed, to the great thickness of the bark, and a covering of fern sufficient to keep off 20° of frost.

PTEROCARYA *caucasica,* commonly called *Juglans fraxinifolia,* in the possession of Mr. DILLWYN, was uninjured ; and at Woburn, although in an exposed situation, it did not suffer.

PISTACIA *Terebinthus* had only the ends of the shoots killed at Norwich, and an old tree in the Apothecaries' garden at Chelsea, was scarcely injured. Neither did it suffer at Owston. P. *narbonensis* was killed to the ground in the Society's Garden. At Abbotsbury P. *vera* and *Terebinthus* were unharmed, but P. *Lentiscus* died.

PHLOMIS *fruticosa* and *ferruginea,* perished in the Society's Garden, and at Glasgow. The former was uninjured at Sketty.

PEGANUM *Harmala* survived at Cambridge.

PUNICA *Granatum* was severely cut in the Society's Garden, on south walls, and P. *nana* was killed ; but the former suffered little in many other places.

QUERCUS *coccifera* was killed at Redleaf and elsewhere near London, but not at Owston, nor Rolleston.

RHAMNUS *Alaternus* and all the varieties suffered severely near London, more than Phillyreas ; none were injured at Owston, or Sketty. R. *balearica* escaped at Cambridge.

RUSCUS *racemosus* suffered little in bleak places near London. R. *androgynus* escaped at Cambridge.

RUTA *graveolens* was killed to the ground at Claremont and

Dropmore, but not injured in several places near London; it was almost destroyed at Glasgow.

Santolina *Chamæ-cyparissus* had its branches slightly injured at Cambridge.

Salix *babylonica* was not at all injured at Claremont, or near London, although killed at Glasgow, as it often is in Scotland in less severe winters.

Salvia *officinalis* was killed in many places about London and much injured elsewhere; it all died at Penllargare, but escaped unhurt at Sketty.

Spartium *multiflorum*, *acutifolium*, and *radiatum*, were entirely killed in the Society's Garden. At Belsay is a plant of *Spartium Ætnense*, 5 feet high; it was only a little weakened by the winter; it grew from a single seed, gathered by Sir C. Monck, on Ætna, in 1831; it is highly ornamental in August and September, and may be called generally hardy in England. Sp. *patens* was killed at Spofforth, and *junceum* was cut to the ground. S. *infestum* perished at Abbotsbury.

Tamarix *gallica* was killed to the ground in Middlesex, and to the north, in some places, but not at Owston. T. *afra*, and *libanotis* were uninjured at Abbotsbury.

Vaccinium *madeirense*, which was cultivated at Claremont for its fruit, was killed. V. *arctostaphylos* was much injured in the garden of the Society.

Chili, and similar South American Regions.

Alstrœmerias sustained the cold in the open border surprisingly well. A. *pulchella* lived in an open border in the garden of the Society without injury. A. *psittacina* was saved in a south border at Norwich. A. *Pelegrina*, *pulchella*, *ovata*, *hirtella*, *aurea*, and one or two others, were uninjured at the

bottom of a wall at Claremont. Mr. HERBERT reports, that at Spofforth the Alstrœmerias are all very flourishing; a large bed of seedling plants of *aurea*, covered with sawdust, began to show green sprouts in March, and even a single plant of the Valparaiso variety, which might have been supposed to be tenderer than the former from Chiloe, covered only with a hatful of sawdust, pushed at the same time.

ALOYSIA *citriodora* was killed to the surface of the ground in the midland counties, but in the south of England only deprived of the young wood. Several plants had remained for years uninjured at Sketty, but they were affected in the winter of 1836-7, and were totally destroyed in the present winter. A plant, however, against a wall at Penrice Castle sustained no material injury.

ARAUCARIA *Dombeyi*, (A. *imbricata* of the Gardens,) was but little injured any where in the midland counties. At Kew, where it was protected, at Dropmore, and Redleaf, it was but slightly affected; in the Society's Garden, unprotected, the bottom branches were killed, but it was not hurt materially. Mr. GOWEN has furnished me with the following fact, concerning this interesting species: "There are 3 Araucarias planted out at Highclere, and each about a foot high. They are all nearly upon the same level in the pleasure ground, which is a plateau of thin soil upon a substratum of hard chalk, on which is overlaid a bed of plastic clay, more or less thick. The height of the plateau is about 600 feet above the level of the sea, lying to the north of a very extensive and elevated tract of chalk downs; the climate is cold, and the winter atmosphere damp and foggy, and extremely liable to wind. Two of these plants are in open spaces in a large grove of lofty trees, and, of course, sheltered from wind. These suffered last winter, having had their foliage much injured. The third is on the open lawn, unsheltered and

exposed to every wind that blows. This plant did not sustain any injury from cold, although the thermometer in its vicinity was down to 5° below zero. It may here be worthy of remark that the thermometer was suspended in a bush of Rhododendron campanulatum within the grove above alluded to. Not a leaf, or bud of the Rhododendron, was injured, and it flowered beautifully in the early spring. It is obvious that the Araucaria Dombeyi is perfectly hardy, but it is impatient of damp, prefers an open situation, and is liable to have its foliage injured by moisture." At Belsay, unprotected, it was not injured in even a single leaf; at this place it is 7 or 8 feet high and still retains on its stem, at the surface of the ground, the leaves which it had when a small plant. A. *brasiliensis* was destroyed almost everywhere; at Dropmore, it was protected by a thick covering, and at Woburn, with double boards, and a lining 3 feet thick of fern; at the former place it afterwards formed buds within four inches of the ground.

ARISTOTELIA *Macqui*, a plant which had survived many winters in most parts of England, was generally killed; but at Carclew, although it had been killed to the ground in the winter of 1830-1, it sustained but little damage this season.

AZARA *dentata* was killed on a south wall in the Society's Garden.

BERBERIS *empetrifolia*, and *dulcis*, proved hardy near London, and elsewhere; even in Nottinghamshire. In some cases they were cut to the ground, but they sprang up again freely.

BOUSSINGAULTIA *baselloides* was observed by Mr. NIVEN, in the Glasnevin garden, to have remarkably hardy roots. They were exposed near the surface of the ground without any covering, and pushed again vigorously after the frost.

BRUGMANSIA; neither species appears to have stood anywhere, except in Mr. Fox's warm garden at Falmouth.

CALCEOLARIA; some hundreds of shrubby varieties, which had

stood at Claremont, in the open borders from four to five years, were not only killed, but the best shrubby sorts, in a brick pit covered with a glass, (but no mat,) were also destroyed. C. *viscosissima* and *integrifolia angustifolia* were killed in the Society's Garden. At Spofforth several survived; C. *integrifolia*, and *sessilis*, were destroyed at this place in a conservatory, but C. *viscosa* survived in the same situation. C. *rugosa* and *integrifolia* were killed even at Falmouth, after having grown without protection for 5 or 6 years.

CESTRUM *Parqui* was killed at Sketty, and in the Society's Garden, along with C. *nocturnum*.

CHLIDANTHUS *fragrans* escaped, in a hothouse border, at Glasgow.

COLLETIA *Ephedra* survived at Liverpool. In the Society's Garden, the only species which escaped was C. *horrida*, and that was not much damaged. At Belsay C. *serratifolia* was only killed to the ground.

CYPELLA *Herbertiana*, covered with a few leaves, was uninjured at Spofforth.

DURANTA *cyanea* was killed in the Society's Garden, after surviving three or four winters.

DUVAUAS. The various species were in some places killed entirely; at Carclew, the main stem of one species only was safe. In the Society's Garden, D. *latifolia* was destroyed on a south wall, D. *dentata*, and *dependens*, were cut to the ground, but D. *ovata* was unharmed.

ECCREMOCARPUS *scaber* was generally killed. At Carclew, in a border where it was trained over a low coping, and along the front of a terrace-wall, facing the east, it was killed; while at the distance of only a few feet, where it was trained against the trellis of a bastion, in a dry situation, it remained alive and vigorous.

EHRETIA *serrata* has been growing several years in the Society's

Garden. This winter it was killed to the ground on a south wall, but sprang up again.

ERYTHRINA *Crista-galli* survived at Cambridge; and at Claremont, and Dropmore at the bottom of a wall in front of a stove; but at the latter place others perished at the foot of a greenhouse.

ESCALLONIA *rubra* was killed in Hampshire, with protection; elsewhere injured, but not destroyed; at Carclew, and in South Wales, but slightly injured. E. *montivedensis*, was generally killed. E. *glandulosa* was found at Singleton to be the hardiest of the genus. In the Society's Garden, it and E. *rubra*, were killed to the ground, but sprang up again vigorously; all the rest perished.

EUXENIA *Mitigui*, after living many years on a south wall, was killed in the Society's Garden.

FUCHSIAS. Where these were a little protected, although killed to the ground, they generally sprang up again from the root; in South Wales, they were but slightly injured. At Carclew, all were killed down to the ground, except F. *gracilis* and *virgata*. F. *discolor* alone survived at Glasgow, and this kind proved the most hardy in the Society's Garden.

HEIMIA *salicifolia* was cut to the ground at Spofforth, but not killed. At Falmouth it was uninjured.

JABOROSA *integrifolia*, which for several years had covered a yard square of a hothouse border, was entirely destroyed at Glasgow.

KAGENECKIA *cratægifolia* was killed on a south wall in the Society's Garden.

LIMNOCHARIS *Humboldtii*, which had lived in the pond at Sketty, through the winter of 1836-7, and which flowered beautifully, was killed.

LITHREA *caustica* perished on a south wall in the Society's Garden.

LOBELIA *Tupa* was generally saved; it was, however, killed at Spofforth, where it had lived many years.

MAYTENUS *chilensis* was killed on a south wall in the Society's Garden, after having stood 8 or 10 winters.

NICOTIANA *glauca* was killed on a south wall in the Society's Garden.

PASSIFLORA *cærulea* stood badly. In the Society's Garden, and many other places, it was killed entirely; at Owston, and Singleton, it was cut down to within a few feet of the ground; at Sketty, it was not materially injured. P. *cæruleo-racemosa*, *palmata*, and *adiantifolia*, were killed at Carclew.

PERNETTIA *mucronata* was killed in the Society's Garden; but it, and *pilosa*, lived at Somerford, and Birmingham; and another species, from Valdivia, is reported to have survived in the Botanic Garden of the latter town.

PHYSIANTHUS *albens* was killed at Cambridge; to the ground at Liverpool; and was unhurt at Glasnevin.

PORLIERIA *hygrometrica* was killed, under a verandah, at Spofforth.

PROSOPIS *siliquastrum*, PSORALEA *glandulosa*, old plants on a south wall, perished in the Society's Garden.

PSIDIUM *Cattleianum*, trained against the front wall of the stove, and protected by a mat, lived at Carclew; some of its leaves became rusty like those of the Myrtle, but the branches generally budded vigorously, and in the summer the plant was as healthy as ever.

QUADRIA *heterophylla*, in a very sheltered situation at Carclew, was much hurt, but afterwards recovered.

SALIX *Humboldtiana* was killed in the Society's Garden.

SOLANUM *crispum*, against a west wall, was killed to within 2 feet of the surface, at Norwich; in the Society's Garden, it was destroyed on a south wall.

SPHACELE *campanulata* was killed on a south wall in the Society's Garden.

VESTIA *lycioides* was killed at Woburn and Norwich; in other places, including Cornwall, killed down to the ground.

VERBENA *Melindres,* lived in open ground at Arundel Castle, protected with a covering 6 inches deep of leaves.

VOLKAMERIA *inermis* was killed to the ground in the Society's Garden, but sprang up again with rather strong shoots.

ZEPHYRANTHES *candida* sustained no injury at Spofforth, even in the leaves; but it was killed at Dropmore.

The results of these returns, and of the numerous observations made in the Garden of the Society, are less conflicting than they usually are in such inquiries. The effects of cold are so much modified by soil, by the surrounding atmosphere, by a variety of local causes which are often not appreciable, that perfect uniformity in apparent results cannot be expected. This has long since been observed by Humboldt and other writers upon Botanical Geography, in comparing one country with another; it has been found that parallels of latitude offer by no means an indication of uniform temperature, as they would do, if the globe were a sphere with a perfectly level surface, and a homogeneous crust, but that the mean temperature of some countries, Lapland for instance, is much higher than it should be, from their position with regard to the equator. Such being the case with respect to large tracts of land, it *a fortiori* would be expected in different localities on such an island as Great Britain, with its diversity of coast, wood, mountains, and exposure to the ocean; accordingly we find in the garden of Mr. Fox, at Grove Hill near Falmouth, not only that such common greenhouse plants, as Acacia armata, and longifolia, Brugmansia suaveolens, Calothamnus quadrifida, and several Cape Heaths, survived last winter, although they perished in other places in Cornwall, but that the much more tender species Dracæna fragrans, Justicia Adhatoda, Thunbergia coccinea, which are generally regarded as stove plants, were also uninjured. In this garden Acacia armata has been growing 16 years, Aloysia citriodora 24, the red Camellia japonica 25, Jasminum revolutum 15, Leptospermum ambiguum 17, Cal-

listemon lanceolatus 20, and the Cape plants, Pentzia flabelliformis, and Salvia aurea, from 14 to 15 years without being killed. This fact is unparalleled in the records of British gardens, even in the case of that of Mrs. HAMILTON NESBITT, in East Lothian, of which some account will be found in the Transactions of the Society, Vol. VII. p. 31. It is obvious, that such exceptions must be left out of all calculations, as to the capability of plants becoming naturalized in a given climate.

Of *Australian* plants, none seem to have been able to bear so much as even + 12°, except Billardiera longiflora, which is recorded at Glasgow to have borne — 1° at the foot of a south wall, and a Eucalyptus, called alpina, which escaped at Norwich; it will, however, be probably found that this circumstance is, in both cases, attributable to some unexplained cause. It, therefore, seems useless to attempt to naturalize New Holland plants in the midland and northern parts of England. On the coast of South Wales, where the thermometer did not fall below + 15°, Leptospermum lanigerum is the only species which appears to have survived; at Carclew, in Cornwall, where the climate seems generally to be very mild, although the temperature is *reported* to have been + 12°, almost all the New Holland and Van Diemen's Land plants either perished outright or were irrecoverably damaged; the only exceptions being Acacia stricta, affinis, sophora, and diffusa, Callitris cupressiformis, Corræa alba, Callistemon lanceolatus, Grevillea rosmarinifolia, Leptospermum ambiguum, and Sollya heterophylla. It is only in such favoured spots as Mr. Fox's garden at Falmouth, and in the mild climate of Ireland, that any considerable number of Australian plants have proved really hardy, and even in those places a great many species died.

Upon the plants of *New Zealand* there is little to remark, except that there seems no probability of their (in many cases) acquiring a permanent station in these islands. Phormium tenax, the New Zealand flax plant, escaped in a swamp at Carclew, a circumstance

that should not be overlooked by those who hope to make it a subject of common cultivation in the milder parts of Ireland.

Of the natural habits of *Chinese* plants little is known with precision. Those which we possess in this country have been generally purchased in the market of Macao, and there is no ascertaining whence they are brought. Many, no doubt, are obtained from the northern provinces where the winter cold is severe; and it is to be presumed that they are what we find hardy enough to sustain a temperature of $-4\frac{1}{2}^{\circ}$, or lower. Among these are especially deserving of notice the beautiful Cunninghamia sinensis; Amygdalus pumila; Fraxinus lentiscifolia, a forest tree of the most ornamental character; Glycine sinensis; Juniperus chinensis, a valuable evergreen; the noble Yu-lan, or Magnolia conspicua; Kœlreuteria paniculata, a fine deciduous tree; tree Pæonies; Taxodium sinense, and the magnificent climber Bignonia grandiflora. Of the Chinese Azaleas, A. indica alba proved the most hardy. I scarcely know in what light to regard the unexpected fact of Illicium anisatum having escaped at Claremont, where it was exposed to a temperature of -12°; but it is worthy of notice, that I. floridanum is reported in so many places to be hardy, that no doubt can remain upon that point at least; see p. 261. The fact mentioned by Mr. Dillwyn, of Pittosporum Tobira not having suffered in South Wales more than Arbutus Unedo, is important, and renders it desirable that this handsome evergreen should become the subject of experiments as to its hardy qualities elsewhere. That Thea viridis should have stood where T. Bohea was killed, will doubtless be regarded as an additional proof of the Black and Green Tea plants being distinct species.

Such *Japanese* plants as have been the subject of experiment, have, in the greatest number of cases, afforded evidence that the vegetation of the colder parts of that region is well suited to our own. If Eriobotrya japonica, Ligustrum lucidum, Laurus camphora, and some others, were unable to resist the winter, probably in

consequence of their being naturally found in warm vallies, on the other hand, thirteen or fourteen other shrubs proved hardy, among which are the beautiful new species of Clematis; and even certain varieties of Camellia japonica exhibited a power of enduring cold which could not have been anticipated. I quite agree with Mr. Herbert, that the result of last winter's frost is such as to render it desirable that all the varieties of Camellia should be tried out of doors, in order to ascertain which are the most hardy.

The species native of the *Himalaya mountains* have resisted the cold to so great an extent, that there can be no doubt of a large proportion of the vegetation of those northern parts of India proving hardy in England, Wales, and Ireland. This fact alone is of the highest interest, because there certainly is no country more accessible to us, or whose productions are more worthy of being imported, whether for their value as timber, their beauty and variety as forest trees, or their brilliancy as mere objects of ornament. The mere knowledge that the noble Deodar cedar is capable of enduring the utmost rigour of an English winter is almost alone sufficient to compensate for the destruction produced by the frost among other plants. All the Pines and Firs appear more or less hardy, except Pinus longifolia, which is not a mountain species. Benthamia fragifera, although tender in the midland counties, appears at home in Cornwall and Devonshire; the beautiful Berberis, many Cotoneasters, a Euonymus, Juniperus recurva, Leycesteria formosa, all the Spiræas, Viburnum cotinifolium, and, above all, the magnificent Rhododendron campanulatum have to be added to our lists of common shrubbery plants. Clematis montana too proved so robust that we have not only secured that beautiful addition to our climbers, among which variety is so much wanted, but have well-grounded expectations that some of the many other beautiful species of the same genus still to introduce, will prove equally suited to this climate. The results of the frost

upon the hybrid Rhododendra have been already sufficiently detailed (page 266), and need not be repeated.

The plants of the *South of Europe* and adjacent countries have been for the most part so long in cultivation here, that much novelty in the results of the winter cannot be expected with regard to them; nevertheless, some facts prove new, others confirm opinions which were not previously established to the satisfaction of every one, and a few are inexplicable upon any principle with which I am acquainted. That Aristolochia sempervirens, a native of Candia; and Peganum Harmala, a common Syrian plant; Ilex balearica and Buxus balearica, evergreens inhabiting the islands of Majorca and Minorca; Juniperus oxycedrus, quite a southern bush; Pistacia terebinthus, which is not found wild north of the coast of the Mediterranean, should all have been found hardy, where such plants as the Tamarisk, Arbutus Unedo, and the Cypress perished, are results which could hardly have been anticipated. They are, however, of the first importance, because it will induce the more general cultivation of those among them which are beautiful. It is interesting to know that Arbutus Andrachne is more hardy than A. Unedo, a fact which may perhaps be connected with their very different localities when wild; the former being exposed to the severe cold of south eastern Europe, while the latter, although wild in Ireland, is more peculiar to the west of Europe. Connected with this is the important fact, that A. Andrachne inarched upon A. Unedo, in which condition it is usually sold in the nurseries, is unfit for planting, because of the tenderness of its stock. By taking care that plants of A. Andrachne, and also A. hybrida, are on their own roots, two fine evergreens may be considered secured to the gardens of the greater part of England. That there should be a variety of the Olive hardy enough to bear $-4\frac{1}{2}^{\circ}$ without the slightest injury, may be a fact of value to the Olive grower in many parts of Europe, and renders it probable that this useful tree may be profitably

raised for its oil in any part of Ireland. To the fruit grower the hardiness of the Green Ischia Fig is a good result, for it will enable this variety to be cultivated much further to the north, than it has hitherto been thought possible to possess Figs as open standards. The Aleppo Pine seems to have generally perished; but Pinus brutia, a Calabrian species very like in habit, seems to be hardy. There has been some difference of opinion as to the comparative hardiness of the species of Cerasus called "Laurels" in this country. The fact is now established beyond doubt that C. lusitanica, the Portugal laurel, is much more hardy than C. laurocerasus, the common laurel. This could not have been expected from what are reported to be the natural habits of those two species; the former inhabiting the mountains of Portugal and Madeira, where the climate is softened by the mild air of the Atlantic, and the latter being found on the mountains of the most eastern parts of Europe and of Persia, where the winters are more rigorous than in western countries. The death of the Sweet Bay and the Laurustinus, on the other hand, corresponds with what might be anticipated from their inhabiting only the warm rifts of calcareous rocks in the south of Europe, where, if their branches are ever killed, their roots are secured against all chances of destruction.

Of *Cape* plants there is little to observe further than that all the shrubby species are evidently too tender to deserve cultivation, without protection, north of Cornwall and Devonshire. It is, however, satisfactory to find that the hardskinned Cape Bulbs and tuberous Pelargonia will live in the open border, with only the aid of a covering of fern-leaves, provided the border is well drained; and the undoubtedly hardy habits of Aponogeton distachyon, and Richardia africana, have secured to us two additional handsome aquatics.

The low southern latitudes of *South America* have furnished a few accessions to hardy collections, among which the Araucaria Dombeyi is the most interesting for the possessors of parks and large gardens, and it has now become an object of some national

importance to procure supplies of seeds of this plant from Valparaiso; for to introduce in abundance so remarkable a vegetable production as this is when old, with columnar trunks often 100 feet high, surmounted by a pyramid of grotesque branches, would be an object scarcely less than national, even if the plant did not furnish excellent timber, and an abundance of valuable resin. It also appears that Aristotelia Macqui, and the Escallonias, rubra and glandulosa, all beautiful evergreens, are about as hardy as a Laurustinus, that the graceful little Berberis empetrifolia is regardless of cold, and that Colletia horrida, Duvaua ovata, and Heimia salicifolia, also seem likely to bear this climate. The preservation of herbaceous plants is less important; but it is satisfactory to know that some at least of the Alströmerias may be henceforward regarded as hardy border flowers.

The number of *Californian* and *Mexican* plants in our gardens, which have been the subject of experiment, is inconsiderable. Of these it is found that the species from California are more tender than those from Mexico: a circumstance doubtless to be explained by the Californian species having been taken indiscriminately from warm vallies and mountain sides, while no one has thought of naturalizing any Mexican species except from the cold mountain ridges. What is most important is that all the beautiful pines and firs from these regions, of whose habits so little was previously known, prove to be perfectly hardy wherever they have been tried, with the exception of Pinus insignis and P. leiophylla.

The winters of *North America* are usually so rigorous north of the districts warmed by the Gulf of Mexico, that to state that a plant is from the United States, is usually equivalent to saying it is hardy. There are, however, some exceptions to that rule, and it was requisite to possess the experience of such a winter as this, in order to judge whether the plants from the British possessions on the Pacific would be as hardy as those from the Atlantic side of the Rocky mountains. The latter seems now to be well esta-

blished, for of all the numerous valuable plants introduced by the Society from North West America, not one of any importance, with the exception perhaps of Arbutus procera, proved tender; and what is of the utmost practical importance, it is now clear that Abies Douglasii, a species that grows as fast as the larch, which has much better timber, is evergreen, and grows to an enormous size, is perfectly suited to the climate of Great Britain. Yuccas also resisted the frost so very generally, that they may be safely introduced into gardens as hardy endogenous shrubs; and the same observation applies to Vaccinium ovatum, one of the handsomest of evergreens. That Pinus palustris should have so generally perished may be a matter of regret, but can excite no surprise, considering that it is exclusively a native of the southern states of the North American union.

Not the least interesting of the facts observed during this winter was this, that in those places where the cold was *very severe*, the more plants were exposed the less they suffered, and that on the contrary, the more they were sheltered without being actually protected artificially, the more extensively they were injured. Thus in the Garden of the Horticultural Society, in a warm soil, and much sheltered by other trees, old plants of the common Arbutus were killed to the ground, or entirely destroyed, while in my own garden, in a cold wet soil, the Arbutus did not suffer at all; and in like manner, Cistuses of all descriptions were in the former case totally destroyed, while in the latter, C. Cyprius, and C. corboriensis were scarcely injured. At Kew, in the warm Botanic Garden, and sheltered by mats and a wooden frame, a fine old plant of the Chilian Araucaria perished at the extremities, and at Highclere, the seat of the EARL of CARNARVON, that plant suffered in a sheltered situation among trees; but it passed the winter perfectly uninjured, with the thermometer at —5° in the same place, when planted upon the open lawn, exposed to all the severity of the weather. In many places the Vine was killed in Vineries, the fires of which

had not been lighted, while it received no harm upon the open wall. At the village of Great Malvern, a very cold and exposed place, situated on the eastern slope of a ridge of high hills, Mr. DILLWYN found that none of the evergreens were at all injured, though they suffered severely on the plain, 2 or 3 hundred feet below the village, and in the neighbourhood of Worcester, which is only 8 miles distant. This corresponds with a remark made by WHITE in his Selborne, letter 63, that in the severe frost of 1784, his evergreens suffered much in his warm sequestered garden, while those in such an *exalted* and near situation as Newton were uninjured. Mr. WILLIAMS observed, that at Cheltenham there was a very marked difference between the injury sustained by plants in the lower part of the town, and in the higher ground above the "Montpellier Spa;" in the former, the Laurustinus were turned brown and withered; in the latter, they in a great measure escaped. In the low ground at Brenchley, the Arbutus was killed, but on higher levels it escaped; and in the same place, under the same circumstances, the double white Camellia escaped, but the single red was killed; in short, the general rule was found by Mr. HOOKER to be, that those plants the most sheltered from the north, and open to the south and south-east, were the most injured, but on the high grounds, open to the north and screened from the south, plants suffered much less; there, many of the most hardy kinds of standard Chinese roses escaped, and the hollies, laurels, and Portugal laurels were not in the least injured. At Brenchley there are some extensive Portugal laurel hedges, which run from the highest to the lowest parts of the grounds; these presented a striking instance of the effects of the frost; in the lowest part they were quite killed to the ground, were gradually less injured as the ground rises, and on the upper part of the ground the hedges were in a fine healthy state. Mr. PHILIP DAVIES COOKE tells me that he saw in Wales a shrubbery at least six hundred feet above the sea, as little, if not less injured than those in lower regions, and a

fig-tree, against a house above five hundred feet above the sea, putting out leaves although it had not had any protection whatever. At Dropmore, Photinia serrulata, where sheltered, had its branches killed down to the main stem, while another plant in a more exposed situation, suffered but little injury. At Redleaf, Portugal laurels, in high situations, escaped with scarcely any damage,while they suffered severely in low and warmer places. At Owston near Doncaster, the Banksian roses were destroyed in warm places, but against a wall, completely excluded from the sun, they were but little injured. Among other things lost at North Stoneham, was a Rosa multiflora, 30 feet high and 30 feet wide, in full vigour, and upwards of 20 years old, against the south part of the house. Could it have been sheltered from the influence of the sun, and consequent unprepared and violent exposure to frost, Mr. BEADON does not conceive that he should have lost it. At Belsay in Northumberland Sir CHARLES MONCK found a great difference between the effects of the frost in a new garden, in a low, dry situation, and in an old one, placed at an elevation above the sea many feet higher ; in the latter a tree of the sweet bay was only a little scorched in the leaves, Viburnum strictum and evergreen oaks were unhurt, and Pinus halepensis, but little injured ; but in the former, that is in the low, warm garden, cypresses of 7 years growth were mostly killed, Quercus Gramuntia, white broom, Colletia serratifolia, Ilex Perado, rosemary, Anagyris indica, Buxus balearica, Buddlea globosa, the Fuchsia, Yucca, Cistus, Laurustinus, Arbutus, and Erica arborea, were killed, or killed to the ground at least. It is useless to multiply such facts. They, and all of a like nature, however paradoxical they may appear, are no doubt to be explained on the same principle as the practice of selecting a northern exposure for Moutan Pæonies, and similar plants, which are apt to suffer from early spring frosts.

It is well known, that plants in a state of growth suffer more from frost, than those which are dormant. I have seen young shoots

of the oak, and ash, blackened by frost in the month of June, in the hedgerows of Norfolk and Suffolk, and yet we know how capable are those natives of the soil of resisting with impunity our severest winters. This is undoubtedly owing in a great measure, if not exclusively, to their tissue containing much more fluid when in a growing state, than when they are dormant. The more succulent a plant, or a part of a plant, the more tender it is under equal circumstances. An oak, or an ash, is nearly exhausted of its fluid contents by the leaves, before the frost sets in, and in fact, the fall of those organs in deciduous trees is probably caused, in part, by the inability of the stem to supply them in autumn with an adequate quantity of fluid food; during the winter, but little water is added to the contents of the stem, until after the severest frosts are past and the return of spring, when the sap is attracted upwards by the budding leaves. The winter, therefore, is the dry season of such plants, and for that reason the period in which they are least liable to the effects of frost. But if any unusual circumstance alters this habit, the capability of resisting frost is altered with it; and thus the Arbutus, the Vine, the Araucaria, and the other plants mentioned in the instances lately quoted, stationed in warm sheltered situations, were stimulated prematurely into growth, their stems were filled with fluid, and they were, in consequence, affected by frost in a much greater degree than when, from the coldness of a station, they were kept in their ordinary winter condition.

Nothing seems more generally to have excited surprize, than that so many plants, apparently killed, sprang up again from the roots. Hence it has been generally said, that many species which would have survived, if undisturbed, were thrown away, in the eager haste of gardeners to remove objects, which had become unsightly. Some have indeed ignorantly imagined, that the mere act of cutting dead stems down had the effect of destroying the lingering vitality of the root. No person, in the slightest degree acquainted with the nature of vegetable life, could entertain such an idea as the last; but

for the first, there is no doubt some foundation. In all cases, the roots of trees suffer from frost less than the stems, partly perhaps because the vitality of a root is greater than that of a stem, as Mr. Knight long since shewed; but more especially because they are so much less exposed to cold. That the earth, being a bad conductor of heat, should remain in winter at a higher temperature than the superincumbent atmosphere will excite no surprise; but probably few persons are aware, to how small a degree the temperature of the earth is lowered in this country, during even long continued and severe frost. In order to measure the exact difference between the temperature of the earth, and the air, experiments have for some time been in progress in the Society's garden. Two thermometers have been buried in the earth, one at the depth of 1 foot, the other at the depth of 2 feet, and their indications have been noted daily. It will be seen, from the following table, that the ground was never frozen to the depth of a foot, in the Society's garden, even while the temperature of the surface was as low as $4\frac{1}{2}^{\circ}$ below zero, and that it did not fall to within 5° of freezing at the depth of 2 feet during the same period. I cannot pretend to explain the discrepancy between this statement, and the observations of those who have found the earth frozen to the depth of more than 2 feet during the past winter, especially, as the soil in which my observations were made is far from dry; but the fact as now stated is certain. In order to check the geothermometrical observations, I caused the earth of the garden to be broken up during the frost, for the purpose of ascertaining how deep the soil was hardened, and the result was as follows:—In the Kitchen garden quarter, 9 inches; in a hard loam footpath, 10 inches; in the Arboretum, adjoining the geothermometers, 8 inches; in the Arboretum, where the turf is chiefly composed of moss, 5 inches.

Register of Geothermometers in the Garden of the Horticultural Society in the month of January, 1838.

		1 foot deep.	2 feet deep.			1 foot deep.	2 feet deep.
January	1	46	46	January	17	34	38
	2	46	46		18	34	37½
	3	45	46		19	33½	37
	4	42	43		20	33	37
	5	42	44		21	33	35
	6	41	44		22	33	35
	7	40	43		23	33	36
	8	39	41		24	33	36
	9	37	41		25	33	36
	10	36	40		26	33	35
	11	36	40		27	33	35
	12	36	40		28	33	35
	13	35	39		29	33	35
	14	35	39		30	33	36
	15	34½	38		31	33	35½
	16	34	38				

It will doubtless have been remarked, that in the previous observations, it has been assumed that the destruction which took place among plants was owing to the intensity of the cold on the morning of the 20th of January. I am aware, that in the opinion of some intelligent observers, it was not so much the excess of cold which produced death, as the subsequent thaw, either on the 22nd of January, when the thermometer rose to 46°, or in the end of the month, and in February. This opinion seems to be formed upon the absence of any appearance of death in some cases till that time, and, also upon the well known fact, that frozen vegetables and trees, suddenly thawed, will die, while they recover, if the temperature is raised by slow degrees. The absence of the appearance of death in certain plants, till some time after it actually takes place, is perhaps owing to the decomposition, which is induced by the intensity of cold, either being suspended so long as they remain frozen, or proceeding very slowly in cold weather. That it really was the excessive cold, which in general produced destruction, may be concluded from this; that such effects as we experienced

last winter are not observed in milder winters, in which rapid thaws succeed severe freezing; and, because it seems certain from what we know of plants, that it is not the mere act of freezing, or unfreezing, that destroys vegetable life; it is necessary that the amount of freezing should reach some unknown point, which seems to vary in different species. Dr. NEUFFER has shewn, (Edinb. New Phil. Journ. 1830, p. 141,) that trees are frozen within certain limits without apparent injury. In some trees, he ascertained that the temperature was lowered to + 5°, or even to + 1½°, without the power of vegetation suffering; so that the reduction of vegetable tissue by cold into that state which is succeeded by an immediate decomposition of the organic parts, varies in different species according to their peculiar nature.

In considering the various circumstances alluded to in this paper, I was naturally led to inquire into the exact manner in which the death of plants is caused by cold. Very little, however, is to be learned upon this subject from the writings of physiologists.

The common opinion is, that frost acts mechanically upon the tissue of plants, by expanding the fluid they contain, and bursting the cells or vessels in which it is enclosed.

M. GŒPPERT, of Breslau, in a paper, originally read at the meeting of German naturalists at Leipsig in 1829, briefly abstracted in *Oken's Isis* for 1830, p. 497, and translated in the *Edinburgh Journal of Natural and Geological Science for* 1831, p. 180, denies that this supposed laceration of vegetable tissue by frost takes place. He is represented to have stated, that the changes which plants undergo, when they are killed by cold, do not consist in a bursting of their vessels or cells, but solely in an extinction of vitality, which is followed by changes in the chemical composition of their juices.

Professor MORREN, of Liège, in a paper, printed in the fifth volume of the *Bulletin de l'Académie Royale de Bruxelles*, has

published some exceedingly interesting observations upon this subject. Like M. Gœppert, he denies the truth of the statement generally made, that frost produces death in plants by bursting their vessels; and he assigns the effect to other causes. His more important conclusions are, 1. That no organ whatever is torn by the action of frost, except in very rare cases when the vesicles of cellular tissue give way, but that the vesicles of plants are separated from each other by frost without laceration. 2. That neither the chlorophyll, the nucleus of cells, elementary fibre, amylaceous matter, raphides, nor the various crystals contained in vegetable tissue, undergo any alteration, unless perhaps in the case of amylaceous matter, which in some cases is converted into sugar, no doubt, in consequence of the action of some acid, formed by the decomposition of the organic parts. 3. That the action of frost operates separately upon each individual elementary organ, so that a frozen plant contains as many icicles as there are cavities containing fluid; the dilatation thus produced not being sufficient to burst the sides of the cavities. 4. That such dilatation is principally owing to the separation of the air contained in the water. 5. That this disengagement of air by water during the act of congelation, is the most injurious of all the phænomena attendant upon freezing: introducing gaseous matter into organs not intended to elaborate it, and bringing about the first stage in a decomposition of the sap and the matters it precipitates; so that with a thaw commences a new chemical action destructive of vegetable life. 6. That the expansion of the cells, and aquiferous organs, drives a great quantity of water into the air-cells, and air-vessels, so that the apparatus intended to contain liquid only, contains water and air, while that which is naturally a vehicle for air conveys water. Such an inversion of functions must necessarily be destructive to vegetable life; even if death were not produced in frozen plants by the decomposition of their juices, the loss of their excitability, and the chemical disturbance of all their contents.

Professor MORREN's observations were made upon various plants frozen in the spring of the present year, having been exposed to a temperature of —4° to + 9° Fahrenheit. One of his statements I give in his own words. "In the parenchyma of many plants, and especially in that of succulent fruits, it is easy to ascertain what modifications are caused by frost in the internal organs of plants. If a frozen apple is opened, it is obvious that the ice is not a continuous mass, but that it is a collection of a multitude of little microscopical icicles. Under the microscope, the fact becomes evident. We know how excessively hard some fruits become when frozen by this mosaic of icicles, especially pears. If we thaw them it is seen that on the instant a multitude of air-bubbles are extricated from the juice of the fruit, and that this juice has then acquired new chemical qualities. I wished to ascertain the cause of these phænomena, and the following is what observation has shewn me. I studied for this purpose more particularly the tissue of the apple. Each cell is filled with a small icicle which has in its middle a bubble of air. We know, that when water freezes the crystals so arrange themselves, that the air separated from their mass by the solidification of the liquid is intercalated between their planes. This air also places itself in a mass of congealed water in a regular manner, the nature of which depends entirely upon that assumed by the crystals, as may be seen by freezing water in a cylindrical vessel, when the air-bubbles always assume the form of a very long cone, terminated by a spherical cap. The augmentation of the volume of water is in great measure owing to this interposition of masses of air. All these effects take place in each cell of a frozen apple, which thus increases in size because each cell of its tissue becomes individually larger. When thawed, the cell recovers itself by the elasticity of its vegetable membrane, and frozen fruit becomes, as we know, very much shrivelled. Each cell, therefore, acts like a bottle of frozen water, only there is no bursting, because the membrane is extensible."

But when plants, easily killed by cold, are exposed to so low a temperature as that just described, it is to be feared, that phænomena actually connected with the destruction of vegetable life may be intermixed with others, which merely indicate the physical effects of cold upon vegetable matter already dead. For the purpose of judging how far this conjecture is well founded, I have carefully examined the post mortem appearances of several plants killed by exposure to a temperature artificially reduced only to from 28° to 30° Fahrenheit. These observations, while they have confirmed the general accuracy of Professor Morren's statements, have led to other conclusions which also appear important.

I could not find the vesicles of cellular tissue separable from each other, even in the most succulent species submitted to experiment, and I conclude that this circumstance, to which Professor Morren attaches importance, and to which M. Payen ascribes the difficulty of extracting starch from frozen potatoes, is not so much connected with the destruction of vegetable life as a result produced upon the tissue by a great intensity of cold. I did, however, find it lacerated in several cases, as if by the distension of the fluid it had contained. In a Stapelia, the whole of the cellular tissue was soft, and deformed, as if it had been extended with but little power of recovering itself again, and several large irregular lacerated cavities were observed. The same appearances were remarked in Euphorbia Tirucalli, but the laceration of the tissue was much less extensive. In Hibiscus Rosa Sinensis the cells of the cortical integument (mesophlœum) were very much torn, and in Hibiscus militaris not only the cells of the bark, but especially those of the pith, were so completely broken up that it was difficult to obtain a thin slice of those parts for examination. In no case, however, have I found any kind of tissue ruptured except the soft cellular dodecahedral or prismatical. It would also seem, that M. Payen recognizes the laceration of tissue by frost, for he ascribes the acridity of frozen potatoes to an extravasation of the acrid matter which exists

in the epiphlœum of such tubers, and which, in a natural state, is locked up in the cells of which that part consists. Independently of these observations, it is not to be doubted that frost does split the tissue of plants. I saw the youngest shoots of Erica mediterranea, cinerea, and others shivered into thousands of pieces in the Horticultural Society's Garden, on the morning of the 20th of January. The branches of Melaleucas were rent to their points at Carclew. Several cases, among others that of the common holly, were observed at Claremont, where the bark was split, and rent asunder from the wood below it; and Sir Oswald Mosley has given me the following instance, which occurred under his own observation. "An oak tree, growing upon the south side of a hill, in a sheltered situation, in Knightly Park, near Burton-upon-Trent, in the County of Stafford, was rent in the severe frost of last winter in two different places, to the height of 13 ft. 3 in. There was an interval of 11 in. between the two shakes, which were each of them one quarter of an inch wide, and extended in depth to the heart of the tree. The girth of the tree is 6 ft. 10 in., and as soon as the frost went the openings closed again, and the tree is now as flourishing as ever." To these cases many more might be added.

The organization of woody tissue appears to be affected, but not by laceration. If a frozen and unfrozen transverse slice of the stem of Hibiscus Rosa Sinensis be placed, side by side, upon the field of the microscope, it is obvious that the diameter of the tubes of the wood and liber is considerably less in the former than in the latter; this appears to be owing to an increase in the thickness of the sides of the tubes, which has the effect of diminishing their calibre.

The expulsion of air from aeriferous organs, and the introduction of it into parts not intended to contain it, is a striking phænomenon. Every one must have remarked that when a leaf has been frozen to death, it changes colour as soon as thawed, acquiring a

deeper green, and being of nearly the same depth of colour on both sides; the same appearance is produced by placing a leaf under the exhausted receiver of an air pump, and in both cases is owing to the abstraction of air from the myriads of little air chambers contained in the substance of this organ. If the leaf of Hibiscus Rosa Sinensis in its natural state is examined, by tearing off the parenchyma from the epidermis with violence, it will be found that the sphincter of its stomates, the cells of the epidermis, and the chambers immediately below the latter, are all distended with air; but, in the frozen leaf of this plant, the air has entirely disappeared; the sphincter of the stomates is empty; the upper and under sides of the cells of the epidermis have collapsed, and touch each other, and all the cavernous parenchyma below the epidermis is transparent, as if filled with fluid. Whither the air is conveyed is not apparent; but as the stomates have evidently lost their excitability, and are in many cases open, it may be supposed, that a part of the air at least has been expelled from the leaf; and as the pith of this plant, in its natural state, contains very little air, and in the frozen state is found to be distended with air, it is also probable, that a part of the gaseous matter expelled from the leaf when frozen is driven through the petiole into the pith. In the petiole of this plant are numerous annular and reticulated vessels, which under ordinary circumstances are filled with air, but after freezing are found filled with fluid; is it not possible that their functions may have been disturbed, by the violent forcing of air through them into the pith, and that when that action ceased they were incapable of recovering from the overstrain, and filled with fluid filtering through their sides? That annular ducts are in some way affected by frost was shown by their state in a thawed branch of Euphorbia Tirucalli, when they were found in a collapsed state, empty of both air and fluid, with their sides shrivelled, and with the fibre itself, which forms the rings, also wrinkled transversely. Facts of an analogous kind were remarked by me in Erica sulphurea. The minute long-haired leaves of this species are in their natural

state firm, bright green, with a rigid petiole, and upon being exposed to pressure in a *compressorium*, at first offer perceptible resistance to its action, and afterwards, as the pressure increases, discharge, chiefly through their petiole, a great quantity of air. But leaves of this plant, which have been frozen by exposure to the temperature of 27° are very different; they are softer, dull olive green, with a flaccid petiole, and offer but little resistance to pressure; yet, although they give way freely, the quantity of air which the compressorium expels is comparatively small, and readily driven out. Moreover the long hairs of this plant, which in the natural state are occupied by fluid, were always found filled with air after freezing, and this without pressure having been exercised upon them.

I am inclined to refer to this cause the well-known fact, of which many cases occurred this winter, that the sudden exposure of frozen plants to warmth will kill them; though they may not suffer if warmed gradually. In such cases, it may be supposed that the air, forced into parts not intended to contain it, is expanded violently, and thus increases the disturbance already produced by its expulsion from the proper air cavities; while, on the other hand, when the thaw is gradual, the air may retreat by degrees from its new situation without producing additional derangement of the tissue. It is also possible that leaves, from which their natural air has been expelled by the act of freezing, may, from that circumstance, have their tissue too little protected from the evaporating force of the solar rays, which we know produce a specific stimulus of a powerful kind upon those organs.

These circumstances are, in themselves alone, sufficient to account for death being produced in plants by frost; and it is chiefly to such as these, that Professor MORREN has directed his attention. It however appears to me, that there are some other points of importance to which observers have not applied themselves.

The green colouring matter of leaves, or chlorophyll, is certainly

affected by so little as only two or three degrees of frost. In Stapelia, when thawed, it is found collected into clusters, and apparently half dissolved. In Euphorbia Tirucalli, when the plant is alive, it is extremely abundant, and consists of distinct spheroidal transparent particles, but, after a slight freezing, a considerable part of it disappears, and the remainder loses its transparency, becomes fusiform, is sometimes surrounded by coagulated gelatinous colourless matter, and many of the particles appear as if burst. In the green subcutaneous parenchyma of the leaf of Hibiscus Rosa sinensis, the vesicles forming the sides of the air chambers are filled with distinct, angular, deep green particles, which, after freezing, become amorphous, and seem as if partially dissolved. It is possibly to the decomposition, of which these appearances are the incipient signs, that the extremely offensive odour of some frost-bitten plants, especially the Laurustinus, when thawed, is to be ascribed.

The amylacous matter, which is so abundant in many plants, also undergoes alteration. This has been remarked by Professor Morren, who found that when Potatoes are frozen, a part of their starch disappears, leaving the deformed integuments behind it, and he suspected that the starch thus lost had furnished the sugar formed in the process of freezing this tuber. I believe it will be found a general fact, that starch is materially altered by frost, for I have always found that the amylaceous particles seem less abundant in a plant after freezing than before, and of those which remain, a part is generally becoming amorphous, clustered together, and certainly diminished in size. This is particularly striking in Hibiscus militaris. In that plant the cells of the pith abound in amylaceous granules, and are often quite filled with them; and they also occur abundantly inside the cells of the bark, of the medullary rays, and even of the tubes of the wood, and in short everywhere except inside the woody tubes of the liber; so that a thin slice of the stem of this plant, treated with iodine, forms a most beautiful microscopical object. But after being frozen, a great part of the starch disappears,

and the particles which remain are not more than a half or quarter their former size. I have not, however, remarked among them any appearance of dissolving; neither have I been able to observe any change in the curious double-headed bodies, in form resembling dumb-bells, found in the vessels of Euphorbias, and supposed to be a state of amylaceous matter, because iodine colours them violet; they appeared to me to be in precisely the same state before and after the plant was frozen to death. M. PAYEN, however, denies that any starch whatever is lost in frozen potatoes (*Comptes rendus, VI.* 345); but as only a small part of his important treatise on amylaceous matter has reached this country, I am unable to state in what way he explains the action of cold upon this substance.

Finally, it appears that frost exercises a specific action upon the latex, destroying its power of motion. If, as PROFESSOR SCHULTZ supposes, this is the vital fluid of plants, such a fact would alone account for the fatal effects of a low temperature. In all the cases I have observed frost coagulates this fluid, collecting it into amorphous masses. In Stapelia, where the laticiferous vessels are easily found, the latex itself is so transparent, that it is difficult to perceive it in a living state, even with the best glasses; but after freezing it is distinctly visible, resembling half coagulated water. In the Hibiscus above mentioned, the stem is covered with long, rigid, simple hairs, filled with a plexus of capillary laticiferous vessels of extreme tenuity, but in which the motion of the latex may be seen beautifully with the $\frac{1}{8}$ of an inch object glass of an achromatic microscope. Upon being thawed, after freezing, all this apparatus is found reduced to some misshapen separate sacs of fine grumous matter, in which no motion can be detected. That these vessels lose their vitality after freezing may indeed be seen without the aid of a microscope; for if a stem of a Ficus elastica, or a Euphorbia, or any such plant, which discharges an abundance of milk when wounded, be first frozen, and then thawed, no milk will follow the incision.

From these facts, I think we must draw the conclusion, that the fatal effect of frost upon plants is a more complicated action than has been supposed; of which the following are the more important phænomena:—

1. A distension of the cellular succulent parts, often attended by laceration; and always by a destruction of their irritability.

2. An expulsion of air from the aeriferous passages and cells.

3. An introduction of air, either expelled from the air passages, or disengaged by the decomposition of water, into parts intended exclusively to contain fluid.

4. A chemical decomposition of the tissue and its contents, especially of the chlorophyll.

5. A destruction of the vitality of the latex, and a stoppage of the action of its vessels.

6. An obstruction of the interior of the tubes of pleurenchyma, by the distension of their sides.

These phænomena may be considered in part mechanical, in part chemical, and in part vital. The two latter are beyond our controul, and probably depend, in part, upon the quality of fluid and organic matter, which may resist the action of cold in different degrees, according to their various modifications; and, in part, upon specific vitality. Salt and water freeze at various temperatures, according to the density of the mixture, from 4° to 27°; oil of turpentine at 14°; oil of bergamot at 23°; vinegar at 28°; milk at 30°; water at 32°; olive oil at 36°; oil of anise at 50°; and it is not to be doubted, that, in like manner, the fluid contents of plants, which we know are infinitely modified, will resist the action of cold in very different degrees.

The mechanical action of frost may however, undoubtedly be guarded against to a great extent. It is well known, that the same plant growing in a dry climate, or in a dry soil, or in a situation thoroughly drained from water during winter, will resist much more cold, than if cultivated in a damp climate, or in wet soil, or in

a place affected by water in winter. Whatever tends to render tissue moist will increase its power of conducting heat and consequently augment the susceptibility of plants to the influence of frost; and whatever tends to diminish their humidity, will also diminish their conducting power and with it their susceptibility; this is an invariable law, and must consequently be regarded as a fundamental principle in Horticulture, upon attention to which all success in the adaptation of plants to a climate less warm than their own will essentially depend. The destructive effects of frost upon the succulent parts of plants, or upon their tissue when in a succulent condition, may be thus accounted for, independently of the mechanical expansion of their parts; indeed, it is chiefly to that circumstance, that Dr. NEUFFER ascribes the evil influence of cold in the spring; for he found, that at Tubingen nearly all trees contain 8 per cent more of aqueous parts in March than at the end of January; and the experience of the past winter shews, that the cultivation of plants in situations too much sheltered, where they are liable to be stimulated into growth, and consequently to be filled with fluid, by the warmth and brightness of a mild protracted autumn, exposes them to the same bad consequences as growing them in damp places, or where their wood is not *ripened*, that is to say, exhausted of superfluous moisture, and strengthened by the deposition of solid matter, resulting from such exhaustion.

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DIRECTIONS TO THE BINDER.

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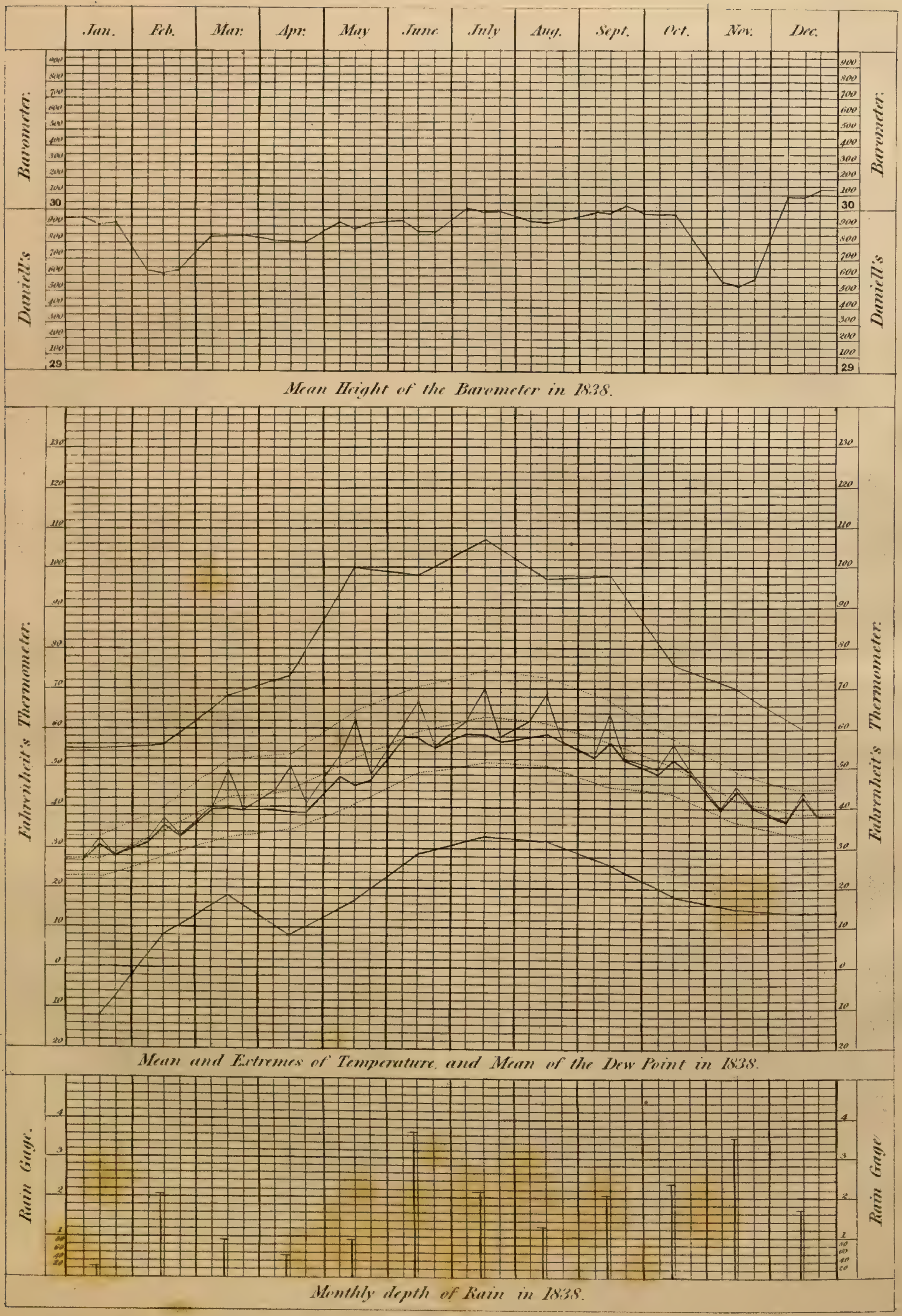
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Barometer.
Daniell's
900
800
700
600
500
400
300
200
100
30
29
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Fahrenheit's Thermometer.
130
120
110
100
90
80
70
60
50
40
30
20
10
0
10
20
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4
3
2
1
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XXXVIII. *Journal of Meteorological Observations made in the Garden of the Horticultural Society at Chiswick during the year* 1838. *By Mr.* Robert Thompson.

This Journal has been kept on the same plan as the preceding excepting that, agreeably to the directions of the Garden Committee, the Thermometrical Observations are registered throughout in terms of Fahrenheit's Scale instead of that of the Centigrade, many persons having objected to the latter as not being so generally well understood. Tables of the averages are however added according to the scales of Fahrenheit, the Centigrade, and Reaumur.

JANUARY.

	1838.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	M.	1	29.982	42	42	—	Very Fine	29.937	48	48	—	Slight Rain	29.939	46	46	—	Very Fine
	T.	2	—.894	41	41	—	Cloudy	—.841	48	45	3	Cloudy & Fine	—.648	46	46	—	Fine
☽	W.	3	—.634	41	41	—	Clear & Fine	—.563	46	43	3	Fine	—.821	35	35	—	Very Clear
	Th.	4	30.384	30	30	—	Clear	—.992	45	45	—	Very Fine	30.072	35	35	—	Fine
	F.	5	—.283	30	30	—	Dense Fog	30.288	35	35	—	Dense fog	—.302	32	32	—	Dense fog
	S.	6	—.326	32	32	—	Foggy	—.279	35	35	—	Foggy	—.252	35	35	—	Foggy
	S.	7	—.341	35	35	—	Hazy	—.316	35	32	3	Bleak and Cold	—.336	35	35	—	Cloudy
	M.	8	—.447	30	30	—	Frosty	—.408	29	29	—	Slight Snow	—.270	25	25	—	Frosty
	T.	9	—.234	22	22	—	Slight Snow	—.187	22	22	—	Ditto	—.151	24	24	—	Ditto
○	W.	10	—.109	22	20	2	Sharp Frost	—.068	28	28	—	Frosty	29.930	21	21	—	Clear and frosty
	Th.	11	—.024	20	20	—	Snowing	—.034	28	28	—	Overcast	30.041	19	19	—	Frosty
	F.	12	—.041	16	16	—	Foggy & Frost	—.341	23	23	—	Frosty & foggy	—.408	19	19	—	Severe frost
	S.	13	—.376	19	19	—	Severe Frost	—.327	26	26	—	Hazy & frosty	—.194	25	25	—	Frosty
	S.	14	—.018	25	25	—	Snowing	—.001	28	25	3	Frosty	29.959	10	10	—	Severe frost
	M.	15	29.887	5	5	—	Severe Frost	29.859	25	23	2	Clear & Ditto	—.865	17	17	—	Frosty
	T.	16	—.905	24	24	—	Overcast	—.947	28	28	—	Foggy	30.100	25	25	—	Ditto
	W.	17	30.276	27	23	4	Frosty	30.277	32	28	4	Frosty	—.291	25	25	—	Ditto
	Th.	18	—.084	22	22	—	Snowing	—.006	25	25	—	Snowing	29.938	24	24	—	Do. Snowing
☾	F.	19	29.848	20	20	—	Severe Frost	29.826	20	11	9	VeryClear&frosty	—.930	14	14	—	Severe frost
	S.	20	30.012	0	0	—	Ditto	—.994	11	4	7	Severe frost	30.018	16	16	—	Ditto
	S.	21	29.941	20	20	—	Ditto	—.897	32	32	—	Overcast	29.757	35	35	—	Thawing
	M.	22	—.740	39	39	—	Overcast	—.765	45	45	—	Fine	—.786	34	34	—	Clear
	T.	23	—.755	32	32	—	Hazy & Cold	—.713	37	37	—	Hazy & Cold	—.737	31	31	—	Overcast&windy
	W.	24	—.816	26	21	5	Cold & Dry	—.811	25	18	7	Bleak and cold	—.769	24	24	—	Cold & Do.
	Th.	25	—.604	26	23	3	Bleak & Cold	—.558	28	21	7	Ditto	—.494	27	27	—	Overcast
●	F.	26	—.414	28	25	3	Ditto	—.402	30	27	3	Ditto	—.389	28	28	—	Ditto
	S.	27	—.338	29	29	—	Ditto	—.328	30	28	2	Ditto	—.410	29	29	—	Ditto
	S.	28	—.490	32	32	—	Cold and raw	—.510	34	34	—	Fine	—.531	32	32	—	Ditto
	M.	29	—.698	36	36	—	Hazy	—.529	46	46	—	Ditto	—.631	40	40	—	Ditto
	T.	30	—.692	36	36	—	Foggy	—.479	36	36	—	Ditto	—.729	37	37	—	Drizzly
	W.	31	—.833	34	34	—	Hazy	—.855	34	34	—	Cold Haze	—.993	32	32	—	Overcast
			29.949	27.12	26.58	0.54		29.911	32.06	30.35	1.71		29.922	28.29	28.29	0.0	

JANUARY.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	48	32	51	27	S	Little	.01	The destructive effects on vegetation which resulted from the intense frost that occurred in this month have been specially detailed at p. 225, and to the numerous facts there recorded, future reference may be readily made. The greatest degree of intensity was attained on the night between the 19th and 20th. the registering thermometer indicating $4\frac{1}{2}^{\circ}$ below zero, whilst the index of the one exposed in a concave metallic speculum receded to 12° below zero. The mean temperature of the month was about $8\frac{1}{2}^{\circ}$ below the average of 10 preceding years. The weather was previously very mild, and this circumstance, together with that of the ground being almost free from snow, appear to have been the causes of much greater destruction among plants than would have otherwise occurred.
2	48	41	52	37	——	Brisk	.02	
3	48	27	54	22	——	Little	.04	
4	48	28	55	25	SW	Ditto		
5	34	30	37	29	NW	Ditto		
6	36	33	38	32	NE	Ditto		
7	35	27	37	23	——	Ditto		
8	30	22	32	20	E	Ditto		
9	25	22	26	20	NE	Ditto		
10	26	13	31	9	——	Ditto		
11	27	11	29	5	N	Ditto		
12	24	9	27	0	E	Ditto		
13	25	20	30	16	NE	Ditto		
14	26	4	29	— 3	N	Ditto		
15	26	15	33	9	NW	Ditto		
16	29	21	32	19	NE	Ditto		
17	30	20	35	18	N	Ditto		
18	23	19	25	10	NE	Brisk		
19	22	— $4\frac{1}{2}$	31	—12	N	Little		
20	11	7	14	3	——	Ditto		
21	38	28	38	22	SE	Ditto		
22	46	29	49	25	——	Ditto		
23	37	24	37	18	E	Ditto		
24	28	23	28	22	NE	Strong		
25	29	26	29	25	——	Brisk		
26	31	27	31	26	——	Little		
27	32	27	33	26	E	Ditto		
28	36	28	36	28	——	Ditto		
29	49	32	51	30	S	Ditto		
30	37	32	37	32	SE	Ditto	.20*	
31	35	32	35	30	NE	Ditto		
	32.87	22.72	35.55	19.12			0.27	

Mean Pressure from the 3 daily observations 29.927 inches
—— Temperature ..... Ditto ..... 29°.15
—— Dew Point ..... Ditto ..... 28°.40
—— Degree of Dryness ... Ditto 0.75
—— Degree of Moisture .. Ditto ..... .979
—— Force of Vapour .... Ditto ..... .190 inch.
Least observed degree of Moisture ..... .735
Maximum Temperature in the Shade .... 49°.
Minimum Temperature in ditto ..... $-4\frac{1}{2}^{\circ}$.
Maximum Temperature in the Sun ..... 55°.
Minimum of Terrestrial Radiation .....—12°.
Mean Temperature of external Air ..... 27°.79

WINDS.

North.....5 days.	N. East.....11 days.
South.....4 ..	S. East.....3 ..
East.....5 ..	N. West.....2 ..
West.....0 ..	S. West.....1 ..

31 days.

Amount of Rain..... 0.27 inch.

* Melted Snow.

FEBRUARY.

	1838.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
☽	Th.	1	30.122	32	32	—	Overcast & Cold.	30.142	32	30	2	Cold haze	30.250	32	30	2	Cold dry haze
	F.	2	—.368	30	27	3	Bleak & Cold	—.392	34	23	11	Clear	—.454	24	24	—	Clear
	S.	3	—.422	30	23	7	Frosty	—.424	35	23	12	Fine	—.416	28	28	—	Overcast
	S.	4	—.396	25	20	5	Ditto	—.393	32	18	14	Cold and dry	—.377	29	29	—	Ditto
	M.	5	—.323	25	23	2	Ditto	—.301	35	30	5	Bleak & Cold	—.218	30	30	—	Frosty
	T.	6	—.091	27	27	—	Ditto	29.966	36	23	13	Fine	29.848	30	30	—	Overcast
	W.	7	29.572	38	38	—	Thawing	—.476	43	43	—	Thawing	—.208	42	42	—	Ditto
	Th.	8	—.147	44	44	—	Cloudy	—.066	51	51	—	Rain	—.071	42	42	—	Rain
○	F.	9	28.742	44	44	—	Rain	28.647	43	43	—	Stormy & Wet	—.071	36	36	—	Clear
	S.	10	29.209	30	30	—	Sharp Frost	29.167	35	35	—	Overcast	—.217	32	32	—	Overcast
	S.	11	—.432	29	20	9	Ditto	—.545	36	36	—	Fine	—.617	37	28	9	Clear & frosty
	M.	12	—.646	22	22	—	Ditto	—.631	36	36	—	Ditto	—.602	25	25	—	Frosty
	T.	13	—.591	17	17	—	Ditto	—.596	32	27	5	Frosty	—.687	25	25	—	Ditto
	W.	14	—.792	20	20	—	Ditto	—.502	34	34	—	Ditto	—.740	26	26	—	Do. and Clear
	Th.	15	—.688	29	26	3	Cold & Dry	—.680	32	25	7	Bleak & Cold	—.604	29	29	—	Bleak & Cold
	F.	16	—.578	28	25	3	Ditto	—.634	32	23	9	Ditto	—.697	32	27	5	Boisterous
☾	S.	17	—.695	30	30	—	Snowing	—.707	32	32	—	Snowing	—.821	30	30	—	Clearing
	S.	18	30.106	34	34	—	Hazy	30.167	37	37	—	Thawing	30.250	32	32	—	Overcast
	M.	19	30.222	33	33	—	Ditto	—.133	39	39	—	Ditto	29.969	31	31	—	Clear
	T.	20	29.788	27	27	—	Clear & Frosty	29.699	40	37	3	Fine	—.681	37	37	—	Overcast
	W.	21	—.735	35	35	—	Hazy	—.758	37	37	—	Hazy	—.765	33	33	—	Hazy
	Th.	22	—.753	32	32	—	Ditto	—.691	37	37	—	Ditto	—.650	34	34	—	Rain
	F.	23	—.541	34	34	—	Foggy	—.468	35	35	—	Drizzly	—.224	36	36	—	Ditto
●	S.	24	28.848	38	38	—	Heavy Rain	28.740	42	42	—	Heavy Rain	28.861	44	44	—	Cloudy
	S.	25	—.792	45	45	—	Cloudy	—.813	50	48	—	Cloudy & Fine	—.931	38	38	—	Stormy and Wet
	M.	26	—.968	39	39	—	Overcast	—.996	40	40	—	Hazy	29.088	36	36	—	Ditto
	T.	27	29.143	37	37	—	Do. & Cold	29.177	39	39	—	Ditto	—.167	39	39	—	Slight Rain
	W.	28	—.129	42	42	—	Overcast	—.177	52	52	—	Fine	—.158	43	43	—	Ditto
			29.637	32.00	30.85	1.14		29.610	37.78	34.82	2.96		29.630	33.28	32.71	0.57	

FEBRUARY.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	34	30	35	29	NE	Little		
2	36	18	40	12	N	Brisk		
3	36	22	38	18	NE	Little		
4	35	22	39	17	——	Brisk		
5	36	25	37	20	——	Ditto		
6	40	25	45	22	E	Little		
7	49	39	49	37	S	Ditto	.10	
8	50	38	50	35	SW	Brisk	.14	
9	45	24	45	20	——	Strong	.30	
10	35	22	38	17	NE	Little		
11	36	16	40	10	N	Ditto		
12	41	14	46	9	——	Ditto		
13	35	14	39	9	NE	Ditto		
14	39	24	35	21	E	Ditto		
15	32	26	33	24	——	Brisk		
16	34	25	37	25	——	Ditto		
17	35	26	37	24	——	Little	.32	
18	38	30	38	29	W	Ditto		
19	39	23	40	17	SE	Ditto		
20	41	35	45	34	——	Ditto		
21	37	31	37	30	NE	Ditto	.03	
22	36	31	38	30	E	Ditto		
23	41	32	41	32	SE	Ditto	.33	
24	47	40	47	38	——	Ditto	.29	
25	52	32	55	28	S	Brisk	.02	
26	40	35	40	34	NE	Ditto	.32	
27	45	37	46	37	E	Little	.11	
28	53	38	56	36	SW	Ditto	.26	
	39.89	27.64	41.53	24.78			2.22	

The nights in this month were generally frosty, but the maximum temperature through the day averaged 8° above freezing. In many situations, the frost was not completely out of the ground till after the 20th; and the 27th was the first day that gardening operations in the soil could be proceeded with since the first week in January. The mean temperature of the month was about 8° below the average of February for 10 previous years. The barometer on the 9th was exceedingly low, and towards the end of the month its depression was so great and so continued as to have been rarely equalled. The quantity of rain which fell here was not much above an average, and certainly not what usually falls during such a low barometrical state of the atmosphere. At Boston the rain amounted to little more than 1½ inch, whilst at Penzance it exceeded 9 inches.

Mean Pressure from the 3 daily observations 29.625 inches.
—— Temperature ..... Ditto ..... 34°.35
—— Dew Point ..... Ditto ..... 32°.79
—— Degree of Dryness .... Ditto ..... 1°.56
—— Degree of Moisture .. Ditto ..... .948
—— Force of Vapour .... Ditto ..... .222 inch.
Least observed degree of Moisture ..... .731
Maximum Temperature in the Shade .... 53°.
Minimum Temperature in ditto ..... 14°.
Maximum Temperature in the Sun ..... 56°.
Minimum of Terrestrial Radiation ..... 9°.
Mean Temperature of External Air ..... 33°.76

WINDS.

North	3 days.	N. East	8 days
South	2 ..	S. East	4 ..
East	7 ..	N. West	0 ..
West	1 ..	S. West	3 ..

28 days.

Amount of Rain.....2.22 inches.

MARCH.

	1838.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	Th.	1	29.142	45	45	—	Cloudy & mild	29.140	47	47	—	Rain	29.142	43	43	—	Rain
	F.	2	—.116	42	42	—	Hazy, rain	—.143	43	43	—	Ditto	—.225	40	40	—	Overcast
☽	S.	3	—.266	40	40	—	Overcast	—.256	49	49	—	Fine	—.265	36	36	—	Ditto
	S.	4	—.018	38	38	—	Rain	—.010	44	44	—	Foggy	—.221	43	43	—	Ditto
	M.	5	—.624	41	41	—	Hazy	—.823	44	39	5	Overcast	—.826	44	44	—	Ditto
	T.	6	—.766	41	41	—	Clear	—.844	51	37	14	Cloudy	—.974	37	37	—	Clear
	W.	7	—.943	39	37	2	Ditto	—.927	50	41	9	Fine	—.966	38	38	—	Ditto
	Th.	8	30.118	41	41	—	Fine	30.201	47	36	11	Ditto	30.329	37	37	—	Fine
	F.	9	—.336	30	30	—	Frosty	—.275	46	32	14	Very Fine	—.187	37	37	—	Ditto
	S.	10	—.033	36	36	—	Cloudy	29.983	46	41	5	Ditto	29.896	35	35	—	Very Fine
○	S.	11	29.808	39	39	—	Fine	—.802	47	36	11	Ditto	—.929	33	33	—	Frosty
	M.	12	30.154	39	39	—	Ditto	30.182	47	28	19	Ditto	30.277	32	32	—	Ditto
	T.	13	—.255	37	36	1	Hazy	—.179	48	48	—	Rain	—.118	50	50	—	Overcast
	W.	14	—.088	49	49	—	Ditto	—.048	61	59	2	Fine	29.962	50	50	—	Ditto
	Th.	15	29.965	45	42	3	Fine	29.986	47	39	8	Ditto	30.016	41	41	—	Fine
	F.	16	—.927	36	36	—	Ditto	—.823	50	37	13	Ditto	29.636	39	39	—	Stormy showers
	S.	17	—.507	38	34	4	Clear & Cold	—.474	43	43	—	Showery	—.453	36	36	—	Clear
	S.	18	—.635	37	37	—	Fine	—.649	46	32	14	Cloudy & Fine	—.642	39	39	—	Overcast
☾	M.	19	—.620	39	39	—	Drizzly	—.640	47	47	—	Drizzly [rain	—.565	43	43	—	Ditto
	T.	20	—.257	48	48	—	Cloudy	—.248	49	37	12	Boisterous,	—.424	37	37	—	Clear & Cold
	W.	21	—.414	39	36	3	Clear & Cold	—.384	49	32	17	Cold & Dry	—.454	37	37	—	Overcast
	Th.	22	—.538	38	38	—	Haz	—.574	38	38	—	Rain	—.562	36	32	4	Ditto & Cold
	F.	23	—.628	30	29	1	Clear & Frosty	—.586	39	32	7	Bleak & Cold	—.563	36	36	—	Ditto
	S.	24	—.584	36	34	2	Fine	—.579	48	28	20	Fine	—.432	41	41	—	Slight Rain
●	S.	25	—.849	44	39	5	Ditto	—.967	53	32	21	Ditto	30.098	34	34	—	Fine
	M.	26	30.139	35	35	—	Frosty haze	30.141	57	37	20	Ditto	—.212	41	39	2	Overcast
	T.	27	—.313	38	37	1	Fine	—.335	54	37	17	Ditto	—.409	37	37	—	Slight Haze
	W.	28	—.525	42	39	3	Ditto	—.534	55	43	12	Very Fine	—.535	41	41	—	Fine
	Th.	29	—.548	37	37	—	Foggy	—.521	60	52	8	Ditto	—.556	50	50	—	Ditto & Mild
	F.	30	—.503	51	47	4	Fine	—.465	57	45	12	Overcast & Fine	—.278	46	46	—	Fine
	S.	31	—.209	44	44	—	Hazy	—.162	50	41	9	Dry haze	—.186	36	35	1	Bleak & Cold
			29.833	39.80	38.87	0.93		29.834	48.77	39.74	9.03		29.849	39.51	39.29	0.22	

MARCH.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	49	38	49	38	S	Little		.11	The quantity of rain was fully half an inch below the average amount for this month. The temperature was nearly 2° below the mean, although the nights only were occasionally frosty; but the maximum power of the solar rays averaged little more than 3° above the mean maximum temperature in the shade. Vegetation was consequently very little excited. The 15th was the coldest night in the month; the 20th was very boisterous and showery, and the 23d bleak and cold with slight snow-showers.
2	44	38	44	35	E	Ditto		.08	
3	51	28	55	28	SE	Ditto		.22	
4	48	37	49	37	——	Ditto		.02	
5	46	39	46	39	NE	Ditto		.06	
6	53	31	56	30	SW	Brisk			
7	53	34	56	30	W	Ditto			
8	51	25	55	22	NW	Ditto		.02	
9	51	28	57	25	E	Little			
10	51	30	53	27	S	Ditto			
11	52	29	56	24	——	Brisk			
12	52	27	59	21	E	Little			
13	52	45	52	45	SW	Brisk		.04	
14	60	43	62	40	——	Ditto			
15	50	24	52	18	NE	Little			
16	52	32	57	29	SW	Brisk		.18	
17	49	32	52	25	NW	Ditto		.02	
18	48	36	50	53	——	Little			
19	50	36	50	33	SW	Ditto			
20	54	33	57	28	W	Strong		.02	
21	53	31	59	25	——	Brisk		.02	
22	40	28	41	23	N	Little		.01	
23	40	37	47	31	NW	Brisk		.01	
24	48	35	52	30	S	Little		.05	
25	53	25	58	16	W	Brisk			
26	55	27	58	20	S	Little			
27	57	29	59	24	NE	Ditto			
28	59	32	65	28	N	Ditto			
29	62	46	68	45	NE	Ditto			
30	60	38	64	32	NW	Ditto			
31	52	26	54	20	N	Ditto			
	51.45	32.87	54.58	29.71			0.86		

Mean Pressure from the 3 daily observations 29.839 inches.
—— Temperature ..... Ditto ..... 42°.69
—— Dew Point ..... Ditto ..... 39°.30
—— Degree of Dryness ... Ditto ..... 3°.39
—— Degree of Moisture .. Ditto ..... .878
—— Force of Vapour ..... Ditto ..... .274 inch.
Least observed degree of Moisture ..... .504
Maximum Temperature in the Shade .... 62°.
Minimum Temperature in ditto ..... 24°.
Maximum Temperature in the Sun ..... 68°.
Minimum of Terrestrial Radiation ..... 18°.
Mean Temperature of External Air ..... 42°.16

WINDS.

North	3 days.	N. East	4 days.
South	5 ..	S. East	2 ..
East	3 ..	N. West	5 ..
West	4 ..	S. West	5 ..

31 days.

Amount of Rain..... 0.86 inches.

APRIL.

	1838.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
☾	S.	1	30.225	33	27	6	Clear & Cold	30.204	43	23	20	Cold & Dry	30.201	28	23	5	Clear & frosty
	M.	2	—.094	30	28	2	Sharp Frost	29.974	44	23	21	Ditto	29.950	40	37	3	Overcast
	T.	3	29.991	37	32	5	Clear	—.983	45	27	18	Fine	—.939	41	40	1	Ditto
	W.	4	—.947	45	43	2	Fine	—.916	56	45	11	Ditto	30.022	47	41	6	Fine
	Th.	5	30.033	50	46	4	Very Fine	—.994	56	39	17	Ditto	29.903	46	45	1	Ditto
	F.	6	29.709	52	52	—	Cloudy	—.748	60	58	2	Cloudy	—.753	52	52	—	Rain
	S.	7	—.587	51	51	—	Slight Rain	—.399	53	53	—	Rain	—.200	44	44	—	Cloudy
	S.	8	—.236	41	41	—	Rain	—.311	49	41	8	Cloudy	—.606	44	37	7	Fine
	M.	9	—.767	43	36	7	Fine	—.816	50	30	20	Very Fine	—.997	38	37	1	Ditto
○	T.	10	30.072	50	43	7	Ditto	30.071	61	46	15	Ditto	30.155	50	48	2	Very Fine
	W.	11	—.188	54	52	2	Very Fine	—.124	66	46	20	Ditto	—.053	51	48	3	Ditto
	Th.	12	—.232	46	37	9	Clear	—.212	56	34	22	Ditto	—.265	41	32	9	Ditto
	F.	13	—.287	43	37	6	Fine	—.201	50	34	16	Ditto	—.081	42	39	3	Ditto
	S.	14	—.002	46	39	7	Overcast	—.015	53	37	16	Ditto	29.991	43	39	4	Ditto
	S.	15	29.803	50	48	2	Cloudy	29.717	59	37	22	Ditto	—.726	42	42	—	Clear & windy
	M.	16	—.758	42	34	8	Do. and Cold	—.755	37	37	—	Snowing	—.644	32	32	—	Do. and Cold
☽	T.	17	—.657	40	34	6	Cold and Dry	—.668	46	30	16	Cloudy & Cold	—.753	35	35	—	Showery
	W.	18	—.762	37	34	3	Ditto	—.769	43	37	6	Cold and dry	—.787	36	36	—	Overcast
	Th.	19	—.773	34	34	—	Snowing	—.751	45	28	17	Cloudy	—.770	36	36	—	Ditto & Cold
	F.	20	—.778	42	35	7	Cloudy	—.894	39	39	—	Sleet and hail	—.754	37	36	1	Fine
	S.	21	—.691	41	37	4	Fine	—.642	45	34	11	Fine	—.424	31	31	—	Clear
	S.	22	—.220	40	40	—	Rain	—.259	46	46	—	Cloudy	—.353	36	34	2	Fine
	M.	23	—.399	47	45	2	Very Fine	—.347	51	45	6	Do. and Fine	—.320	43	43	—	Rain
●	T.	24	—.465	46	45	1	Fine	—.564	53	50	3	Ditto	—.703	40	40	—	Clear
	W.	25	—.759	43	43	—	Ditto	—.779	49	45	4	Overcast	—.818	43	43	—	Overcast
	Th.	26	—.891	46	46	—	Hazy and cold	—.914	52	48	4	Bleak & Cold	30.015	37	37	—	Bleak & Cold
	F.	27	—.975	44	37	7	Cold and Dry	—.943	48	39	9	Ditto	29.921	35	32	3	Cold & Windy
	S.	28	—.879	42	36	6	Ditto	—.843	48	30	18	Fine but cold	—.748	42	39	3	Overcast
	S.	29	—.740	41	23	18	Ditto	—.738	49	25	24	Ditto	—.712	42	39	3	Ditto
	M.	30	—.589	45	39	6	Ditto	—.535	52	52	—	Rain	—.577	45	45	—	Cloudy
			29.817	43.36	39.13	4.23		29.802	50.13	38.60	11.53		29.804	40.63	38.73	1.90	

APRIL.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	45	16	54	8	N	Brisk		
2	49	29	52	22	W	Ditto		The mean temperature of April usually increases 5 or 6 degrees above that of March; but the increase in the present was scarcely 2°, being more than 4° below the average. Vegetation was about 3 weeks later than usual. The want of sun heat was still remarkable, the thermometer in the sun averaging little more than 4° above that in the shade. The temperature on the night of the first was 16° below freezing. From the 15th to the 20th, the weather was cold and stormy with showers of snow, hail, and sleet.
3	58	39	62	36	NW	Little		
4	60	41	64	37	W	Ditto	.01	
5	59	46	62	44	——	Brisk	.02	
6	60	49	63	48	SW	Ditto	.03	
7	52	39	52	38	——	Ditto	.05	
8	51	38	56	34	NW	Ditto		
9	52	32	62	27	N	Little		
10	64	35	68	45	SW	Ditto		
11	69	35	73	28	——	Ditto		
12	59	32	62	26	NW	Brisk		
13	52	32	55	27	N	Little		
14	54	42	56	39	——	Ditto		Mean Pressure from the 3 daily observations 29.807 inches.
15	61	35	66	33	NW	Strong	.03	—— Temperature ..... Ditto ..... 44°.70
16	46	29	49	26	——	Ditto	.01	—— Dew Point ..... Ditto ..... 38°.82
17	47	32	49	28	——	Brisk	.03	—— Degree of Dryness ... Ditto ..... .588
18	46	32	50	31	——	Ditto	.01	—— Degree of Moisture .. Ditto ..... .803
19	45	26	47	22	N	Brisk	.02	—— Force of Vapour. .... Ditto .... . .270 inch.
20	46	32	53	28	——	Little	.22	Least observed degree of Moisture ..... .438
21	52	30	56	25	W	Ditto		Maximum Temperature in the Shade..... 69°.
22	52	37	57	35	S	Brisk	.01	Minimum Temperature in ditto ..... 16°.
23	57	36	60	34	——	Little	.04	Maximum Temperature in the Sun ..... 73°.
24	56	31	64	27	SE	Ditto		Minimum of Terrestrial Radiation ..... 8°.
25	52	42	63	42	NE	Brisk		Mean Temperature of External Air..... 44°.06
26	49	35	52	33	N	Ditto	.01	WINDS.
27	49	32	54	27	——	Ditto		North..... 10 days. | N. East.....1 days.
28	52	32	57	27	——	Ditto		South..... 2 .. | S. East.....1 ..
29	50	34	54	33	——	Ditto		East..... 0 .. | N. West.....7 ..
30	56	44	61	42	SW	Ditto	.03	West..... 4 .. | S. West.....5 ..
								30 days.
	53·33	34·80	57·76	31·73			·52	Amount of Rain..... 0.52 inches.

MAY.

	1838.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
☽	T.	1	29.641	63	57	6	Fine	29.625	55	55	—	Rain	29.699	52	52	—	Fine
	W.	2	—.827	63	57	6	Very Fine	—.828	70	59	11	Very Fine	—.718	55	55	—	Thund. & Lightn.
	Th.	3	—.852	58	55	3	Ditto	—.917	67	50	17	Ditto	—.986	56	54	2	Clear & Fine.
	F.	4	—.999	59	52	7	Ditto	—.973	68	59	9	Dry Haze.	30.034	49	48	1	Ditto
	S.	5	30.107	56	50	6	Thunder.	30.154	66	61	5	Fine	—.213	45	43	2	Fine
	S.	6	—.324	48	46	2	Slight Haze	—.288	63	46	17	Very Fine	—.326	41	41	—	Clear
	M.	7	—.318	52	46	6	Clear & Fine	—.293	73	54	19	Ditto	—.348	45	45	—	Ditto
	T.	8	—.317	59	46	13	Ditto	—.287	76	48	28	Ditto	—.231	52	45	7	Ditto
○	W.	9	—.194	58	45	13	Ditto	—.142	73	30	43	Hot & Dry.	—.177	53	45	8	Fine
	Th.	10	—.320	50	41	9	Cloudy	—.372	56	34	22	Cold & Dry.	—.416	37	36	1	Clear & Cold
	F.	11	—.406	46	41	5	Dry Haze	—.304	61	33	28	Very Fine.	—.255	42	38	4	Ditto
	S.	12	—.175	50	39	11	Clear	—.062	64	27	37	Ditto	29.851	43	41	2	Ditto
	S.	13	29.722	47	47	—	Hazy	29.663	55	37	18	Fine	—.644	40	37	3	Clear
	M.	14	—.687	50	37	13	Fine	—.676	50	39	11	Cloudy & Cold	—.709	41	41	—	Overcast.
	T.	15	—.768	45	34	11	Cold & Dry.	—.684	55	25	30	Fine	—.822	33	29	4	Clear
☾	W.	16	—.869	45	30	15	Clear & Do.	—.446	53	27	26	Ditto	—.846	40	39	1	Ditto
	Th.	17	—.867	47	39	8	Dry Haze.	—.806	58	35	23	Ditto	—.816	46	45	1	Cold & Dry.
	F.	18	—.864	47	36	11	Cold & Dry.	—.893	59	30	29	Fine	—.983	50	46	4	Ditto
	S.	19	—.951	50	40	10	Overcast	—.875	62	34	28	Ditto	—.734	50	50	—	Overcast.
	S.	20	—.615	54	54	—	Ditto	—.558	59	59	—	Slight Rain	—.507	52	52	—	Ditto
	M.	21	—.530	58	55	3	Cloudy	—.588	65	46	19	Overcast & Fine.	—.617	54	54	—	Ditto
	T.	22	—.541	55	52	3	Ditto	—.536	60	60	—	Rain	—.414	50	50	—	Ditto
●	W.	23	—.798	56	48	8	Ditto	—.817	58	41	17	Cloudy	—.832	52	52		Rain.
	Th.	24	—.915	50	48	2	Overcast	—.936	59	59	—	Ditto	—.990	50	46	4	Cold dry Haze.
	F.	25	30.013	50	46	4	Cold dry Haze.	30.007	62	53	9	Fine	30.053	50	48	2	Fine
	S.	26	—.085	50	48	2	Overcast.	—.060	60	44	16	Ditto	—.053	44	43	1	Ditto
	S.	27	29.989	53	41	12	Ditto	29.928	60	44	16	Ditto	29.790	51	50	1	Ditto
	M.	28	—.572	54	54	—	Rain	—.565	61	61	—	Rain	—.589	52	52	—	Fine
	T.	29	—.621	59	59	—	Ditto	—.675	67	55	12	Very Fine	—.697	52	50	2	Ditto
	W.	30	—.788	59	55	4	Overcast.	—.843	70	54	16	Ditto	—.881	55	54	1	Ditto
☽	Th.	31	—.906	62	57	5	Very Fine	—.923	72	59	13	Ditto	—.932	54	54	—	Heavy thunder showers.
			29.922	53.32	46.93	6.39		29.891	62.48	45.74	16.74		29.908	47.93	46.29	1.64	

MAY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	62	50	68	47	S	Little	.12	The mean temperature of this month advanced beyond that of the preceeding in nearly the usual ratio ; but it was still 4° below the average of May for 10 previous years. From the 10th to the 18th the nights were successively more or less frosty ; and on the night of the 15th the thermometer was as low as 26°, the radiator being at the same time at 17°. Fruit-trees had their blossoms and embryo fruit much injured. N. East winds were prevalent, with their usual great degree of dryness, thunder occurred on the 2nd and 5th, but was unaccompanied with rain except a few large drops. No rain fell between the 1st and 19th. On the 9th the Hygrometer indicated the greatest degree of dryness hitherto registered at the garden.
2	68	49	72	45	——	Brisk		
3	67	35	73	30	——	Ditto		
4	70	48	75	44	E	Little		
5	67	44	74	41	NE	Brisk		
6	64	36	74	33	——	Little		
7	76	45	89	39	——	Ditto		
8	78	40	91	36	——	Ditto		
9	77	41	100	39	——	Ditto		
10	59	30	74	25	——	Brisk		
11	63	27	82	19	——	Little		
12	71	33	88	28	E	Ditto		
13	61	30	78	24	NW	Brisk		
14	52	28	72	22	NE	Ditto		
15	57	26	78	17	——	Little		
16	59	28	75	20	——	Ditto		
17	60	30	75	24	——	Brisk		
18	54	31	76	24	——	Little		
19	62	48	77	47	SE	Brisk	.03	
20	59	49	66	48	S	Little	.01	
21	64	50	75	48	S	Ditto	.06	
22	61	45	73	41	SW	Brisk	.02	
23	48	46	62	46	NW	Ditto	.02	
24	62	46	72	45	N	Little	.02	
25	66	45	80	44	NE	Ditto		
26	64	40	79	36	——	Brisk		
27	64	45	77	43	——	Ditto	.05	
28	60	45	77	42	S	Little	.21	
29	68	50	84	46	SW	Brisk		
30	72	43	88	39	W	Ditto		
31	75	48	90	43	SW	Ditto	.38	
	64.19	40.35	77.86	36.29			0.92	

Mean Pressure from the 3 daily observations 29.907 inches
—— Temperature .....Ditto..... 54°.57
—— Dew Point .....Ditto..... 46°.32
—— Degree of Dryness ....Ditto..... 8°.25
—— Degree of Moisture ...Ditto..... .754
—— Force of Vapour .....Ditto..... .355 inch.
Least observed degree of Moisture ..... .235
Maximum Temperature in the Shade .... 78°.
Minimum Temperature in ditto..... 26°.
Maximum Temperature in the Sun .... 100°.
Minimum of Terrestrial Radiation ..... 17°.
Mean Temperature of External Air ..... 52°.27

WINDS.

North.....	1 days.	N. East 15	days.
South.....	6 ..	S. East 1	..
East	2 ..	N. West 2	..
West.....	1 ..	S. West 3	..

31 days.

Amount of Rain .....0.92 inches.

JUNE.

	1838.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	F.	1	30.032	59	59	—	Very Fine	29.940	68	68	—	Rain	29.886	54	54	—	Rain
	S.	2	29.908	60	60	—	Cloudy	—.797	66	59	7	Cloudy & Fine	—.770	52	52	—	Fine
	S.	3	—.750	62	59	3	Fine	—.652	68	55	13	Ditto	—.716	54	54	—	Ditto
	M.	4	—.780	63	58	5	Ditto	—.743	62	62	—	Rain	—.833	46	46	—	Ditto
	T.	5	—.964	57	57	—	Hazy	—.903	68	50	18	Very Fine	—.947	55	55	—	Ditto
	W.	6	30.108	52	52	—	Slight Haze	30.093	58	54	4	Slight Haze	30.085	55	53	2	Ditto
	Th.	7	—.264	55	41	14	Ditto	—.194	60	46	14	Fine	—.157	43	41	2	Ditto
○	F.	8	—.322	51	41	10	Cold & Dry	—.287	59	41	18	Cold & Dry	— 247	46	45	1	Ditto
	S.	9	—.290	57	48	19	Fine	—.168	71	47	24	Fine	—.021	49	48	1	Ditto
	S	10	29.850	61	50	11	Cloudy& Do.	29.683	66	46	20	Cloudy&Do.	29.580	55	55	—	Rain
	M..	11	—.590	58	58	—	Hazy	—.523	64	59	5	Ditto	—.493	51	51	—	Ditto
	T.	12	—.612	59	59	—	Rain	—.593	65	55	10	Thunder	—.677	55	55	—	Fine
	W.	13	—.750	57	55	2	Overcast	—.694	64	57	7	Fine	—.677	55	55	—	Heavy Rain
	Th.	14	—.800	59	59	—	Ditto	—.775	65	54	11	Ditto	—.723	55	55	—	Rain
☾	F.	15	—.844	62	59	3	Ditto	—.734	64	64	—	Rain	—.678	56	56	—	Fine
	S.	16	—.850	62	62	—	Drizzly	—.839	68	64	4	Overcast, Fine	—.810	61	61	—	Overcast
	S.	17	—.948	66	66	—	Cloudy	—.747	72	72	—	Ditto	—.825	65	65	—	Ditto
	M.	18	—.678	70	70	—	Overcast	—.562	72	72	—	Cloudy	—.633	61	61	—	Rain
	T.	19	—.870	62	57	5	Cloudy & Windy	—.849	67	59	8	Fine	—.905	55	55	—	Fine [rain
	W.	20	- .792	63	63	—	Heavy Rain	—.704	62	62	—	Cloudy	—.583	59	59	—	Boisterous,
	Th.	21	—.664	60	60	—	Cloudy	—.640	70	59	11	Fine	—.701	55	55	—	Cloudy, windy
●	F.	22	—.900	63	55	8	Do. & Windy	—.857	63	63	—	Showery	- .984	55	55	—	Fine
	S.	23	30.212	61	57	4	Very Fine	30.152	73	57	16	Very Fine	30.099	52	50	2	Ditto
	S.	24	.086	72	64	8	Ditto	—.008	80	61	19	Ditto	—.115	54	54	—	Ditto
	M.	25	—.142	71	66	5	Ditto	—.066	78	68	10	Ditto	—.007	55	55	—	Rain
	T.	26	—.060	58	58	—	Overcast	29.976	62	62	—	Hazy	29.962	59	59	—	Ditto
	W.	27	—.090	64	59	5	Do. & Fine	30.016	66	63	3	Cloudy	—.993	58	58	—	Fine
	Th.	28	—.100	61	61	—	SlightShowrs	—.012	75	54	21	Fine	—.948	58	58	—	Very Fine
	F.	29	—.050	62	57	5	Very Fine	29.959	70	50	20	Very Fine	—.970	53	53	—	Heavy Rain
☽	S.	30	—.028	59	59	—	Fine	- .920	69	55	14	Ditto	—.844	55	55	—	Rain
			29.944	60.86	57.63	3.23		29.869	67.16	57.93	9.23		29.862	54.53	54.26	0.27	

JUNE.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	72	52	76	50	S	Little		.27	
2	70	47	84	46	SW	Ditto		.08	The quantity of rain was more than double the average for this month, and amounted to upwards of 3½ inches, whilst the mean temperature was near the average; so that being well supplied with both heat and moisture, vegetation made rapid progress as far as these agents were concerned. The temperature however was maintained rather by warm South and S. West winds than by direct solar influence; for the solar rays had not their usual midsummer power.
3	69	49	85	46	——	Ditto		.04	
4	72	40	80	34	S	Ditto			
5	74	45	95	39	W	Ditto			
6	57	43	81	36	NE	Ditto			
7	64	40	90	34	N	Ditto			
8	66	35	80	29	——	Brisk			
9	68	43	85	39	S	Ditto			
10	66	51	85	50	——	Ditto		.17	
11	67	49	76	46	E	Little		.47	
12	72	42	82	39	——	Ditto		.02	Mean Pressure from the 3 daily observations 29.891 inches.
13	69	47	80	45	W	Ditto		.56	—— Temperature ..... Ditto ..... 60°.85
14	67	52	80	50	S	Brisk		.02	—— Dew Point ..... Ditto ..... 56°.61
15	73	49	80	45	——	Little		.02	—— Degree of Dryness ... Ditto ..... 4°.24
16	76	58	87	59	——	Ditto		.17	—— Degree of Moisture .. Ditto ..... .873
17	75	58	85	56	——	Ditto		.02	—— Force of Vapour ..... Ditto ..... .501 inch.
18	76	54	87	50	——	Brisk		.25	Least observed degree of Moisture ..... .457
19	72	53	82	50	SW	Ditto		.37	Maximum Temperature in the Shade..... 83°.
20	64	57	68	56	——	Strong		.05	Minimum Temperature in ditto ..... 35°.
21	72	51	83	48	——	Ditto		.01	Maximum Temperature in the Sun ..... 98°.
22	71	46	79	44	——	Ditto		.12	Minimum of Terrestrial Radiation ..... 29°.
23	77	45	90	42	S	Little			Mean Temperature of External Air ..... 59°.89
24	83	55	96	52	——	Ditto			
25	79	56	98	55	E	Ditto		.72	
26	68	53	75	50	NE	Ditto		.01	
27	65	54	75	53	S	Ditto		.01	
28	73	49	88	43	E	Ditto			
29	74	44	86	40	SW	Ditto		.20	
30	74	52	90	43	W	Ditto		.07	
	70.83	48.96	83.26	45.73				3.65	

WINDS.

North	2 days	N. East	2 days
South	12 ..	S. East	0 ..
East	4 ..	N. West	0 ..
West	3 ..	S. West	7 ..

30 days.

Amount of Rain..... 3.65 inches.

JULY.

	1838.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	S.	1	2 9913	68	61	7	Cloudy & Fine	29.936	73	57	16	Very Fine	29.980	55	55	—	Rain
	M.	2	3 0023	65	65	—	Sultry	30.031	75	59	16	Do. with Clouds	—.992	55	55	—	Ditto
	T.	3	—.051	63	63	—	Rain	—.065	64	64	—	Rain	30.025	61	61	—	Ditto
	W.	4	—.121	67	64	3	Hazy	—.142	68	68	—	Drizzly	—.132	59	59	—	Fine
	Th.	5	—.166	66	59	7	Very Fine	—.154	78	64	14	Very Fine	—.080	60	60	—	Ditto
	F.	6	—.042	60	60	—	Rain, Thunder	29.986	75	72	3	Fine	29.957	58	58	—	Ditto
○	S.	7	29.997	64	59	5	Fine	—.972	68	59	9	Ditto	—.996	55	55	—	Ditto
	S.	8	—.956	64	61	3	Overcast	30.004	70	59	11	Ditto	30.077	61	59	2	Cloudy & Do.
	M.	9	30.156	64	61	3	Very Fine	—.149	72	66	6	Very Fine	—.164	61	59	2	Fine
	T.	10	—.188	66	59	7	Ditto	—.168	74	64	10	Ditto	—.130	64	63	1	Very Fine
	W.	11	—.115	64	60	4	Ditto	—.085	79	69	10	Ditto	—.042	62	59	3	Ditto
	Th.	12	—.077	64	63	1	Overcast	—.061	72	68	4	Overcast	29.994	61	59	2	Ditto [ning
	F.	13	—.006	70	64	6	Very Fine	29.920	80	72	8	Very Hot	—.803	73	72	1	Sultry, Light-
☾	S.	14	29.752	65	65	—	Rain	—.738	68	59	9	Overcast	—.669	62	62	—	Heavy Rain
	S.	15	—.752	64	64	—	Ditto	—.722	64	64	—	Showery	—.905	54	54	—	Showery
	M.	16	30.024	63	61	2	Clear	30.109	70	59	11	Fine	30.202	54	54	—	Very Fine
	T.	17	—.221	63	59	4	Very Fine	—.156	73	57	16	Ditto	29.958	60	60	—	Fine
	W.	18	—.100	61	60	1	Ditto	—.173	70	61	9	Cloudy & do.	30.283	61	59	2	Ditto
	Th.	19	—.265	64	59	5	Fine	—.196	74	54	20	Fine	—.057	54	54	—	Overcast
	F.	20	—.007	60	60	—	Rain	29.983	72	59	13	Ditto	—.002	55	55	—	Ditto & Fine
●	S.	21	—.031	59	54	5	Cloudy	30.111	64	48	16	Ditto	—.132	54	50	4	Fine
	S.	22	—.176	58	43	15	Clear & Dry	—.188	61	41	20	Ditto	—.160	50	46	4	Ditto
	M.	23	—.182	55	52	3	Overcast	—.138	65	48	17	Cloudy & do.	29.986	59	57	2	Ditto
	T.	24	29.970	56	56	—	Fine	29.984	64	45	19	Fine	30.002	53	50	3	Ditto
	W.	25	30.008	57	50	7	Ditto	—.998	61	48	13	Cloudy	—.000	54	54	—	Do. & Cool
	Th.	26	29.992	56	50	6	Ditto	—.900	67	50	17	Do. & Fine	29.708	55	55	—	Rain
	F.	27	—.804	59	54	5	Cloudy	—.830	66	50	16	Ditto	—.814	55	55	—	Fine
	S.	28	—.816	60	55	5	Fine	—.760	71	55	16	Very Fine	—.711	57	57	—	Slight Rain
☽	S.	29	—.651	61	61	—	Cloudy	—.638	66	63	3	Cloudy	—.620	54	54	—	Rain
	M.	30	—.686	59	55	4	Fine	—.698	55	55	—	Heavy Showers	—.792	54	54	—	Ditto
	T.	31	—.861	58	55	3	Ditto	—.900	69	52	17	Very Fine	30.008	54	54	—	Fine
			30.004	62.03	58.45	3.58		29.993	69.29	58.36	10.93		29.980	57.55	56.71	0.84	

JULY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	76	56	90	57	S	Little	.34	
2	78	56	86	55	——	Ditto	.09	The weather throughout proved very favourable for vegetation
3	70	51	72	50	SW	Ditto	.14	and for the operations of the garden. The mean temperature
4	80	48	94	45	S	Ditto	.06	was but little short of the average, and the same may be said of
5	81	49	94	56	SE	Ditto		the amount of rain. The 13th was the hottest day in the season;
6	77	52	86	49	S	Brisk	.45	there was much lightning at night and rain began to fall next
7	70	54	72	53	SW	Ditto	.11	morning.
8	72	56	75	54	W	Ditto		
9	78	56	98	55	——	Ditto		
10	80	60	100	58	SW	Little		Mean Pressure from the 3 daily observations 29.992 inches.
11	80	59	81	57	——	Ditto		—— Temperature .....Ditto..... 62°.95
12	82	60	107	58	——	Ditto		—— Dew Point .....Ditto..... 57°.84
13	84	58	104	55	——	Ditto		—— Degree of Dryness ....Ditto..... 5°.11
14	84	56	87	54	——	Brisk	.18	—— Degree of Moisture....Ditto..... .865
15	73	51	92	48	——	Little	.17	—— Force of Vapour.....Ditto..... .523 inch.
16	75	45	91	41	——	Brisk		Least observed degree of Moisture..... .506
17	74	57	90	56	——	Little		Maximum Temperature in the Shade.... 84°.
18	73	51	86	49	NW	Ditto		Minimum Temperature in Ditto..... 40°.
19	78	50	93	47	W	Ditto	.03	Maximum Temperature in the Sun .... 107°.
20	75	49	93	44	——	Ditto		Minimum of Terrestrial Radiation ..... 33°.
21	67	51	93	49	N	Brisk		Mean Temperature of External Air..... 62°.78
22	64	42	78	37	——	Little		
23	70	52	90	50	NW	Ditto		
24	67	40	83	33	NE	Ditto		
25	70	41	83	36	NW	Ditto		
26	70	51	80	47	W	Ditto	.16	
27	71	48	85	46	——	Brisk		
28	72	50	87	48	SW	Little	.05	
29	72	44	87	39	W	Brisk	.09	
30	72	44	82	40	——	Little	.32	
31	74	47	74	40	——	Ditto		
	74.48	51.09	87.51	48.35			2.19	

WINDS.

North.....2 days.		N. East ....1 days.	
South 4	..	S. East.....1	..
East 0	..	N. West....3	..
West 9	..	S. West ...11	..

31 days.

Amount of Rain ..... 2.19 inches.

AUGUST.

	1838.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	W.	1	30.012	59	58	1	Fine	30.014	72	57	15	Very Fine	29.904	57	57	—	Heavy Rain
	Th.	2	29.844	67	67	—	Overcast	29.786	68	68	—	Rain	—.743	60	60	—	Overcast
	F.	3	—.716	64	59	5	Cloudy	—.721	72	57	15	Fine	—.768	59	59	—	Fine
	S.	4	—.782	68	64	4	Overcast	—.626	73	68	5	Thickly Overcast	—.606	60	60	—	Slight rain
○	S.	5	—.561	62	62	—	Ditto	—.531	70	52	18	Cloudy & Fine	—.564	57	57	—	Cloudy
	M.	6	—.507	63	63	—	Showery	—.508	61	61	—	Sultry, showers	—.592	55	55	—	Fine
	T.	7	—.682	60	57	3	Fine	—.741	65	59	6	Showery	—.971	55	55	—	Ditto
	W.	8	30.027	61	55	6	Ditto	30.077	64	57	7	Fine	30.156	50	50	—	Ditto
	Th.	9	—.224	63	55	8	Ditto	—.183	65	59	6	Ditto	—.104	57	57	—	Ditto
	F.	10	—.118	63	61	2	Overcast	—.059	72	68	4	Overcast &Do.	—.067	59	59	—	Ditto
	S.	11	29.966	69	68	1	Fine	—.091	74	68	6	Very Fine	—.108	61	61	—	Ditto
☾	S.	12	30.098	70	64	6	Overcast& Do.	—.064	79	68	11	Ditto	—.077	66	64	2	Ditto
	M.	13	—.075	65	61	4	Ditto	—.079	73	52	21	Ditto	—.222	53	50	3	Ditto
	T.	14	—.243	58	55	3	Clear & Fine	—.142	70	50	20	Ditto	—.178	54	54	—	Overcast
	W.	15	—.136	59	52	7	Ditto	—.134	68	48	20	Ditto	—.191	54	54	—	Fine
	Th.	16	—.133	57	54	3	Overcast	—.082	72	50	22	Ditto	—.113	58	58	—	Overcast
	F.	17	—.165	59	55	4	Hazy	—.201	65	55	10	Hazy	—.248	59	59	—	Slight Rain
	S.	18	—.249	62	59	3	Very Fine	—.210	75	57	18	Very Fine	—.168	61	61	—	Fine
	S.	19	—.011	65	59	6	Ditto	29.921	75	56	19	Ditto	29.890	59	59	—	Ditto
●	M.	20	29.819	70	55	15	Ditto	—.734	70	55	15	Ditto	—.481	59	59	—	Fine
	T.	21	—.325	63	59	4	Ditto	—.378	62	62	—	Showery	—.398	53	53	—	Ditto
	W.	22	—.249	58	58	—	Rain	—.297	65	65	—	Ditto	—.313	55	55	—	Showery
	Th.	23	—.438	55	55	—	Cloudy	—.550	61	61	—	Showery	—.816	53	53	—	Fine but Cold
	F.	24	—.952	58	54	4	Fine	—.986	64	55	9	Cloudy & Fine	30.097	53	53	—	Overcast
	S.	25	30.110	51	51	—	Foggy	30.060	65	65	—	Rain	—.025	54	54	—	Ditto
	S.	26	—.090	59	55	4	Fine	—.105	68	55	13	Very Fine	—.124	55	55	—	Fine
	M.	27	—.110	66	63	3	Very Fine	—.113	76	72	4	Ditto	—.135	62	62	—	Very Fine
☽	T.	28	—.073	66	66	—	Overcast	29.966	81	68	13	Ditto	29.795	64	64	—	Do., Lightnng
	W.	29	29.784	64	57	7	Fine	—.956	59	48	11	Cloudy	30.175	45	45	—	Clear
	Th.	30	30 175	50	45	5	Clear	30.154	65	39	26	Clear & Dry	—.197	50	46	4	Do. and Fine
	F.	31	—.183	54	50	4	Do. & Fine	—.155	70	50	20	Very Fine	—.130	50	45	5	Do. and Dry
			29.930	61.54	57.93	3.61		29 922	69.00	58.23	10.77		29.946	56.35	55.90	0.45	

AUGUST.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	75	57	87	57	S	Little		.17	The weather, on the whole, continued favourable throughout the month. The rain, which only amounted to a moderate quantity, fell for the most part in showers, frequently with sultry intervals. There were only 6 days on which the hygrometer did not indicate more or less dryness in the air, generally a considerable degree existed. About an average temperature was maintained. A very heavy thunder storm, accompanied with rain, occurred on the forenoon of the 23rd.
2	69	56	81	53	SW	Brisk		.11	
3	74	59	85	59	W	Ditto			
4	71	52	84	50	SW	Ditto		.08	
5	72	56	85	55	——	Ditto		.12	
6	70	52	80	49	——	Little		.22	
7	70	50	92	47	——	Strong		.04	
8	69	42	81	39	W	Brisk			
9	70	55	81	53	SW	Ditto		.01	
10	73	60	83	59	——	Ditto			
11	75	57	85	55	——	Ditto			
12	78	61	90	60	——	Little			
13	76	41	91	34	——	Ditto			
14	72	46	86	39	——	Ditto			
15	71	39	83	32	SE	Ditto			
16	75	53	86	52	S	Ditto			
17	70	54	83	54	——	Ditto		.01	
18	76	56	87	55	——	Ditto			
19	76	46	87	44	——	Brisk			
20	71	56	82	54	——	Little		.03	
21	72	51	83	49	SW	Strong		.09	
22	66	50	80	48	——	Brisk.		.12	
23	67	46	80	39	NW	Strong		.10	
24	68	41	82	38	——	Little		.04	
25	66	48	72	45	S	Ditto		.09	
26	77	54	91	51	NW	Ditto			
27	81	59	96	56	W	Ditto			
28	82	56	97	53	S	Ditto			
29	67	39	82	38	N	Brisk			
30	71	38	80	35	NW	Ditto			
31	75	43	93	38	W	Ditto			
	72.42	50.74	85.00	48.06			1.23		

Mean Pressure from the 3 daily observations 29.932 inches.
—— Temperature.....Ditto..... 62°.29
—— Dew Point.....Ditto..... 57°.35
—— Degree of Dryness....Ditto..... 4°.94
—— Degree of Moisture...Ditto..... .856
—— Force of Vapour.....Ditto..... .514 inch.
Least observed degree of Moisture..... .486
Maximum Temperature in the Shade.... 82°.
Minimum Temperature in ditto..... 38°.
Maximum Temperature in the Sun..... 97°.
Minimum of Terrestrial Radiation..... 32°.
Mean Temperature of External Air..... 61°.58

WINDS.

North	2 days.	N. East.....	0 days.
South	6 ..	S. East.....	1 ..
East.....	0 ..	N. West	4 ..
West.....	4 ..	S. West.....14	..

31 days.

Amount of Rain ..... 1.23 inches.

SEPTEMBER.

	Morning.						Noon.					Night.				
1838.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	30.103	57	54	3	Very Fine	30.076	68	54	14	Very Fine	30.111	50	46	4	Very Fine
S.	2	—.123	61	61	—	Overcast	—.132	70	55	15	Ditto	—.201	52	50	2	Ditto
M.	3	—.189	57	54	3	Very Fine	—.120	69	50	19	Ditto	—.090	52	50	2	Ditto
○ T.	4	29.994	45	45	—	Foggy	29.913	70	59	11	Ditto	29.636	58	58	—	Ditto
W.	5	—.605	64	62	2	Fine	—.500	69	69	—	Rain	—.374	56	56	—	Ditto, Showers
Th.	6	—.272	59	59	—	Heavy Rain	—.279	69	61	8	Fine	—.321	56	56	—	Clearing
F.	7	—.318	64	64	—	Cloudy	—.334	68	68	—	Showery	—.473	54	54	—	Cloudy
S.	8	—.627	50	50	—	Rain	—.737	59	55	4	Cloudy & Cold	30.058	46	46	—	Clear & Cold
S.	9	30.207	46	41	5	Fine	30.255	61	41	20	Very Fine	—.370	50	50	—	Ditto
☽ M.	10	—.401	47	45	2	Very Clear	—.402	60	46	14	Ditto	—.549	45	45	—	Ditto
T.	11	—.547	43	43	—	Foggy	—.544	57	45	12	Ditto	—.543	52	52	—	Ditto
W.	12	—.515	49	49	—	Ditto	—.433	64	54	10	Ditto	—.418	50	50	—	Fine
Th.	13	—.341	54	50	4	Fine	—.300	64	59	5	Overcast	—.235	50	50	—	Ditto
F.	14	—.149	61	55	6	Ditto	—.069	66	61	5	Ditto	—.121	59	59	—	Overcast
S.	15	—.080	59	59	—	Hazy	—.057	69	63	6	Very Fine	—.082	52	52	—	Very Fine
S.	16	—.074	55	55	—	Foggy	—.037	70	59	11	Ditto	—.105	54	54	—	Ditto
M	17	—.057	57	57	—	Ditto	—.037	70	58	12	Ditto	—.121	58	57	1	Ditto
● T.	18	—040	58	57	1	Fine	—.017	63	56	7	Cloudy	—.021	57	55	2	Overcast
W.	19	29.942	55	55	—	Rain	29.845	61	46	15	Very Fine	29.876	57	57	—	Drizzly
Th.	20	—.845	56	56	—	Cloudy	—.890	60	60	—	Cloudy	—.941	44	44	—	Clear
F.	21	—.854	43	43	—	Foggy	—.977	64	54	10	Very Fine	—.957	43	43	—	Fine
S.	22	—.994	41	41	—	Ditto	—.893	69	61	8	Ditto	30.005	54	54	—	Overcast
S.	23	—.908	61	61	—	Slight Rain	—.866	54	54	—	Ditto	29.928	58	58	—	Rain
M.	24	—.907	50	50	—	Foggy	—.923	54	54	—	Heavy Rain	—.750	55	55	—	Ditto
T.	25	—.797	51	51	—	Overcast	—.734	54	54	—	Hazy	—.940	46	46	—	Hail
☾ W.	26	—.975	48	48	—	Foggy	—.982	57	57	—	Cloudy	—.981	55	55	—	Fine
Th.	27	—.890	54	54	—	Rain	—.841	55	55	—	Rain	—.933	45	45	—	Clear
F.	28	—.975	44	44	—	Foggy	30.015	60	60	—	Fine	30.072	54	54	—	Fine
S.	29	30.014	55	55	—	Ditto	.028	59	59	—	Rain	—.138	55	55	—	Ditto
S.	30	—.197	58	58	—	Fine	—.211	63	63	—	Very Fine	—.303	54	54	—	Overcast
		29.998	53.10	52.53	0.87		29.981	63.20	56.33	6.87		30.021	52.36	52.00	0.36	

SEPTEMBER.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	73	54	92	49	NW	Little		.04	The depression of temperature in this month amounted to more than 5° below that of the preceding, and was below the mean of September. The period of really favourable weather for vegetation in the season may be stated to have commenced in June and terminated with August, a period too limited for bringing many of the productions of the Garden to full perfection, especially as the quantity of sun-heat was defective. Much rain fell on the 5th, 24th, and 27th.
2	71	45	87	39	W	Ditto			
3	73	38	91	34	——	Ditto			
4	76	43	94	40	S	Ditto			
5	75	56	92	54	SW	Brisk		.30	
6	75	54	82	53	——	Strong		.14	
7	70	50	86	49	S	Little		.10	
8	56	35	61	33	N	Brisk			On the 15th, about 11 A. M. there was a remarkably dark haze.
9	63	36	83	28	NW	Little			On the 16th about 8 P. M. a meteor appeared to proceed from the west in an easterly direction as far as the zenith, where it seemed more spreading and evanescent, with a deflection to the South.
10	68	34	82	26	W	Ditto			
11	70	37	85	30	——	Ditto			
12	72	44	84	38	——	Ditto			
13	66	43	73	38	W	Ditto			
14	69	56	81	56	W	Ditto			
15	70	39	98	38	NW	Ditto			
16	74	48	91	42	NE	Ditto			
17	70	50	83	48	E	Ditto			
18	64	52	72	50	NE	Ditto			
19	63	52	63	50	NW	Ditto		.05	
20	68	35	82	30	——	Ditto			
21	68	36	85	30	——	Ditto			
22	69	49	85	45	SW	Brisk		.01	
23	69	45	78	40	NE	Little		.10	
24	56	49	60	41	W	Ditto		.75	
25	58	42	61	38	——	Ditto		.01	
26	58	48	65	48	NE	Ditto		.01	
27	59	40	59	38	NW	Ditto		.55	
28	65	51	78	48	E	Ditto			
29	60	54	63	52	——	Ditto		.02	
30	64	43	72	41	N	Ditto			
	67.06	45.26	78.93	41.43			2	.08	

Mean Pressure from the 3 daily observations 30.000 inches
—— Temperature ..... Ditto ..... 56°.32 —
—— Dew Point ..... Ditto ..... 53°.62 —
—— Degree of Dryness .... Ditto ..... 2°.70 —
—— Degree of Moisture .. Ditto ..... .879
—— Force of Vapour ..... Ditto ..... .453 inch.
Least observed degree of Moisture ..... .506
Maximum Temperature in the Shade .... 76°. —
Minimum Temperature in ditto ..... 34°. —
Maximum Temperature in the Sun ..... 98°. —
Minimum of Terrestrial Radiation ..... 26°. —
Mean Temperature of External Air ..... 56°.16 —

WINDS.

North 2	days	N. East 4	days.
South.....2	..	S. East 0	
East.....3		N. West... 7	
West 8		S. West 4	

30 days.

Amount of Rain.....2.08 inches.

OCTOBER.

		Morning.					Noon.					Night.				
1838.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
M.	1	30.341	51	51	—	Hazy	30.318	58	55	3	Hazy	30.357	55	55	—	Overcast
T.	2	—.356	55	55	—	Cloudy	—.348	64	60	4	Fine	—.457	51	51	—	Fine
⊙ W.	3	—.419	53	50	3	Fine	—.406	61	46	15	Clear & Do.	—.444	46	46	—	Very Clear
Th.	4	—.395	49	48	1	Very Fine	—.376	60	55	5	Very Fine	—.392	46	46	—	Fine
F.	5	—.351	50	48	2	Hazy	—.338	59	54	5	Ditto	—.406	50	48	2	Ditto
S.	6	—.379	48	45	3	Overcast	—.379	55	50	5	Overcast	—.410	51	50	1	Overcast& Do
S.	7	—.369	54	50	4	Ditto	—.343	54	50	4	Ditto	—.385	51	50	1	Ditto
M.	8	—.359	54	45	9	Ditto	—.351	56	50	6	Bleak & Cold	—.412	49	49	—	Overcast
T.	9	—.367	55	50	5	Fine	—.318	56	50	6	Ditto	—.306	48	48	—	Ditto
☾ W.	10	—.234	51	50	1	Cloudy	—.164	55	55	—	Cloudy	—.159	49	49	—	Ditto
Th.	11	—.462	50	50	—	Do. & Fine	29.859	58	56	2	Cloudy & Fine	29.786	52	52	—	Ditto
F.	12	29.671	43	43	—	Clear & Cold	—.657	46	46	—	Showery	—.758	44	44	—	Fine
S.	13	—.806	33	33	—	Clear	—.821	43	43	—	Ditto	—.975	32	32	—	Frost
S.	14	—.929	36	36	—	Cloudy	—.691	48	48	—	Overcast	—.497	31	31	—	Ditto
M.	15	—.616	50	48	2	Fine	—.656	56	54	2	Cloudy& Cold	—.650	50	50	—	Cloudy
T.	16	—.639	58	52	6	Cloudy	—.684	60	58	2	Cloudy	—.442	58	56	2	Overcast
W.	17	—.293	54	54	—	Ditto	—.300	59	51	8	Fine	—.548	46	43	3	Slightly Do.
● Th.	18	30.013	41	38	3	Fine	30.013	54	45	9	Overcast	—.861	52	52	—	Ditto
F.	19	29.833	56	53	3	Overcast	29.952	60	47	13	Clear and Fine	30.073	49	49	—	Ditto
S.	20	—.923	59	58	1	Rain	30.096	66	61	5	Cloudy & Do.	—.199	55	55	—	Overcast
S.	21	—.981	56	56	—	Cloudy	—.250	63	62	1	Ditto	—.198	57	57	—	Clear
M.	22	30.116	57	56	1	Ditto	—.063	63	59	4	Ditto	—.043	56	56	—	Overcast
T.	23	29.924	56	55	1	Overcast	29.853	58	57	1	Overcast	29 765	55	55	—	Ditto
W.	24	—.764	47	45	2	Cloudy	—.742	60	54	6	Fine	—.228	47	47	—	Ditto
Th.	25	30.056	45	45	—	Foggy	30.056	58	55	3	Cloudy	—.947	54	54	—	Clear
☽ F.	26	29.795	54	52	2	Fine	29.843	60	50	10	Very Fine	—.925	40	40	—	Ditto
S.	27	.890	50	49	1	Ditto	—.843	57	55	2	Cloudy	—.755	52	52	—	Stormy & wet
S.	28	—.617	50	50	—	Hazy	—.558	55	55	—	Hazy	—.404	52	52	—	Heavy Rain
M.	29	—.280	46	43	3	Windy	—.514	54	41	13	Fine, windy	—.722	51	50	1	Clear
T.	30	—.760	42	42	—	Clear	—.746	53	46	7	Very Fine	—.774	51	51	—	Overcast
W.	31	—.846	41	41	—	Heavy rain	—.820	45	45	—	Rain	—.759	51	51	—	Ditto
		29.993	49.80	48.10	1.70		29.979	56.58	52.03	4.55		29.991	49.38	49.06	0.32	

OCTOBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	59	51	68	50	N	Brisk	.01	The weather was bleak and cold from the 6th to the 10th; on the afternoon of the 12th there was a slight fall of snow, the nights of the 13th and 14th were frosty to such a degree as to spoil the flowers and foliage of the Dahlias. At noon on the 13th there was a remarkably thick fall of snow, particularly in the northern suburbs of London. Towards the end of the month the weather became unusually boisterous. The 27th was stormy and much rain fell; the morning of the 28th was hazy, with rain and high wind at night; about midnight it increased to a violent hurricane which raged for 4 hours, a number of large elms and other trees in the neighbourhood of London were broken, or torn from their roots by the force of the wind.
2	63	47	71	45	——	Ditto		
3	64	42	74	35	NE	Little		
4	61	37	75	31	——	Ditto		
5	60	46	73	45	E	Ditto		
6	56	49	62	48	NE	Ditto		
7	56	47	62	46	——	Ditto		
8	56	47	59	45	——	Ditto		
9	56	47	57	44	——	Ditto		
10	57	48	59	45	NW	Ditto		
11	60	49	66	48	SW	Ditto		
12	47	42	61	36	NW	Ditto	.02	
13	44	28	49	19	——	Ditto	.02	
14	49	26	54	18	SW	Ditto	.20	
15	56	47	60	35	W	Ditto		
16	60	51	66	46	SW	Ditto		
17	55	37	65	29	W	Ditto		
18	54	42	69	36	SW	Ditto		
19	62	45	76	41	NW	Ditto		
20	66	41	72	36	W	Ditto	.02	
21	64	54	66	53	SW	Ditto		
22	61	53	64	52	S	Ditto		
23	57	52	59	49	——	Ditto		
24	63	39	75	34	W	Ditto		
25	58	48	64	47	SE	Ditto		
26	62	30	70	25	W	Brisk		
27	57	47	66	45	SW	Ditto	.80	
28	59	45	61	41	——	Hurricane	.49	
29	54	36	66	29	——	Strong		
30	56	40	71	35	——	Little	.50	
31	53	32	53	25	NE	Ditto	.30	
	57.58	43.38	64.61	39.12			2.36	

Mean Pressure from the 3 daily observations 29.987 inches.
—— Temperature ..... Ditto ..... 51°.92
—— Dew Point ..... Ditto ..... 49°.73
—— Degree of Dryness ... Ditto ..... 2°.19
—— Degree of Moisture ... Ditto ..... .929
—— Force of Vapour ..... Ditto ..... .396 inch.
Least observed degree of Moisture ..... .506
Maximum Temperature in the Shade .... 66°.
Minimum Temperature in ditto ..... 26°.
Maximum Temperature in the Sun ..... 76°.
Minimum of Terrestrial Radiation ..... 18°.
Mean Temperature of External Air ..... 50°.48

WINDS.

North.....2 days.	N. East.....7 days.
South.....2 ..	S. East .....1 ..
East.....1 ..	N. West .....4 ..
West.....5 ..	S. West.....9 ..

31 days.

Amount of Rain.....2.36 inches.

NOVEMBER.

		Morning.					Noon.					Night.				
1838.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
Th.	1	29.428	43	43	—	Overcast	29.395	49	49	—	Rain	29.371	38	38	—	Very Clear
○ F.	2	—.354	38	38	—	Fine	—.316	46	46	—	Ditto	—.424	37	37	—	Slightly overcast
S.	3	—.460	34	34	—	Ditto	—.401	46	41	5	Overcast	—.064	47	47	—	Ditto
S.	4	28.844	46	46	—	Ditto	28.854	55	55	—	Rain	—.034	42	42	—	Showery
M.	5	29.204	45	45	—	Ditto	29.369	49	49	—	Ditto	—.603	45	45	—	Fine
T.	6	—.736	45	44	1	Ditto	—.738	49	45	4	Very Fine	—.687	45	45	—	Rain
W.	7	—.460	54	54	—	Rain	—.448	59	57	2	Fine	—.493	52	52	—	Windy
Th.	8	—.553	48	47	1	Very Clear	—.656	55	50	5	Very Fine	—.457	43	43	—	Rain
☾ F.	9	—.374	45	45	—	Heavy Rain	—.404	50	50	—	Cloudy	—.590	40	40	—	Clear
S.	10	—.720	37	37	—	Clear	—.740	45	43	2	Very Fine	—.826	34	34	—	Clear
S.	11	—.669	30	30	—	Dense Fog	—.635	39	39	—	Hazy and Cold	—.830	36	34	2	Ditto & Cold
M.	12	30.126	37	37	—	Clear	30.185	45	41	4	Clear and Do.	30.389	37	37	—	Clear
T.	13	—.462	34	34	—	Do. & Frosty	—.125	46	43	3	Fine	—.402	34	34	—	Ditto
W.	14	—.264	30	30	—	Frosty and Foggy	—.190	44	44	—	Ditto	—.064	41	41	—	Hazy
Th.	15	29.948	40	40	—	Foggy	29.989	43	43	—	Foggy	29.804	42	42	—	Ditto
F.	16	—.713	41	41	—	Ditto	—.686	46	46	—	Ditto	—.737	42	42	—	Overcast
● S.	17	—.772	41	41	—	Ditto	—.752	47	47	—	Fine	—.697	43	43	—	Rain
S.	18	—.680	44	44	—	Rain	—.672	45	45	—	Rain	—.640	40	40	—	Ditto
M.	19	—.589	40	40	—	Ditto	—.528	39	39	—	Ditto	—.540	40	40	—	Damp
T.	20	—.569	40	40	—	Overcast	—.677	40	40	—	Cold Haze	—.629	40	40	—	Overcast
W.	21	—.455	40	40	—	Hazy & Cold	—.369	47	47	—	Foggy	—.263	40	40	—	Drizzly
Th.	22	—.190	43	43	—	Foggy	—.184	48	41	—	Ditto	—.406	41	41	—	Ditto
F.	23	—.510	44	44	—	Hazy	—.555	47	47	—	Cloudy	—.602	37	37	—	Overcast
☽ S.	24	—.581	37	34	3	Overcast & cold	—.626	40	35	5	Bleak & Cold	—.858	29	29	—	Frosty
S.	25	30.023	27	27	—	Sharp Frost	30.036	37	37	—	Cold Haze	—.988	31	30	1	Ditto
M.	26	29.906	30	25	5	Ditto	29.916	33	27	6	Frosty	—.851	30	28	2	Ditto
T.	27	—.469	30	30	—	Overcast	—.380	35	34	1	Overcast	—.207	39	39	—	Overcast [rain
W.	28	—.031	39	39	—	Cloudy	28.841	46	46	—	Heavy rain	28.717	51	51	—	Boisterous with
Th.	29	28.673	48	48	—	Boisterous	—.679	50	50	—	Do. & Boister-	—.879	45	45	—	Thunderlight-
F.	30	29.030	44	44	—	Do.andCloudy	29.051	52	52	—	Ditto [ous	29.320	48	48	—	Fine [ning
		29.556	39.80	39.47	0.33		29.546	45.73	44.50	1.23		29.579	40.30	40.13	0.17	

NOVEMBER.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	52	36	53	31	SW	Little	.12	A large amount of rain fell in this month; and the barometer averaged very low. It was remarkably so on the 28th and 29th, on the former of which days considerably more than an inch of rain fell: the wind at the same time was exceedingly boisterous, and there were likewise much thunder and lightning. The hurricane increased during the night, and abating but little during the day, it continued throughout the night of the 29th accompanied with thunder, lightning, and heavy rain. At the commencement the wind was blowing strongly from the East; but it suddenly changed and came with increased violence from the direction of SSW.
2	49	30	52	25	——	Ditto	.04	
3	52	40	55	34	S	Ditto		
4	56	39	68	37	SW	Ditto	.06	
5	52	29	54	24	W	Ditto		
6	56	42	70	40	SW	Ditto	.26	
7	61	47	69	42	——	Brisk	.02	
8	57	44	68	43	——	Ditto	.30	
9	52	32	61	28	——	Little	.10	
10	50	28	64	24	——	Ditto		
11	43	34	45	28	NE	Ditto		Mean Pressure from the 3 daily observations 29.560 inches
12	47	27	60	20	——	Brisk		—— Temperature.....Ditto..... 41°.94
13	48	25	60	19	——	Ditto		—— Dew Point.....Ditto..... 41°.36
14	48	38	50	36	E	Little		—— Degree of Dryness.....Ditto..... 0°.58
15	45	41	45	41	——	Ditto		—— Degree of Moisture.....Ditto..... .976
16	46	35	51	28	N	Ditto		—— Force of Vapour.....Ditto..... .296 inch.
17	51	40	65	37	——	Ditto	.32	Least observed degree of Moisture..... .812
18	46	39	46	39	NE	Brisk	.40	Maximum Temperature in the Shade..... 61°.
19	41	37	41	36	——	Ditto	.10	Minimum Temperature in ditto..... 23°.
20	40	35	40	35	——	Little		Maximum Temperature in the Sun..... 70°.
21	50	49	45	49	E	Ditto	.13	Minimum of Terrestrial Radiation..... 15°.
22	51	37	51	33	——	Ditto	.02	Mean Temperature of External Air..... 42°.29
23	50	36	51	34	——	Ditto		
24	40	23	40	15	NE	Ditto		WINDS.
25	39	26	39	20	E	Ditto		North.....2 days | N. East.....7 days
26	39	27	43	20	——	Brisk		South..... 2 .. | S. East.....0 ..
27	47	34	47	29	——	Ditto	.04	East.....9 .. | N. West.....0 ..
28	53	46	53	45	——	Strong	1.21	West.....1 . | S. West.....9 ..
29	53	44	53	43	SW	Boisterous	.43	30 days.
30	53	43	55	39	S	Ditto		Amount of Rain .....3.55 inches.
	48.90	36.09	53.13	32.46			3.55	

DECEMBER.

	1838.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
○	S.	1	29.425	43	43	—	Clear	29.557	52	52	—	Rain	29.345	54	54	—	Rain [thunder
	S.	2	—.475	52	52	—	Fine	—.493	50	50	—	Heavy Showers	—.432	48	48	—	Heavy showers
	M.	3	—.476	45	45	—	Clear	—.460	53	53	—	Cloudy & Fine	—.457	42	42	—	Very Clear
	T.	4	—.558	39	39	—	Ditto	—.608	48	45	3	Very Fine	—.937	42	42	—	Cloudy
	W.	5	—.871	41	41	—	Cloudy	—.905	46	46	—	Drizzly	30.131	42	42	—	Overcast
	Th.	6	30.276	36	36	—	Fine	30.301	41	40	1	Fine	—.304	42	42	—	Ditto
	F.	7	—.272	46	46	—	Rain	—.282	46	46	—	Rain	—.379	37	37	—	Clear
☾	S.	8	—.387	34	34	—	Clear	—.376	41	41	—	Fine	—.461	32	32	—	Frosty
	S.	9	—.441	30	30	—	Frosty&Foggy	—.397	35	35	—	Foggy	—.381	30	30	—	Do. & Foggy
	M.	10	—.316	30	30	—	Ditto	—.275	35	35	—	Fine	—.224	34	34	—	Overcast
	T.	11	—.321	38	38	—	Slight Haze	—.347	43	43	—	Hazy	—.407	39	39	—	Ditto
	W.	12	—.368	39	39	—	Hazy	—.356	44	44	—	Ditto	—.350	40	40	—	Ditto
	Th.	13	—.354	41	41	—	Ditto	—.335	44	44	—	Ditto	—.413	40	40	—	Ditto
	F.	14	—.406	38	38	—	Foggy	—.412	44	44	—	Fine	—.421	41	41	—	Ditto
	S.	15	—.375	35	35	—	Ditto	—.359	40	40	—	Ditto	—.346	30	30	—	Frosty
	S.	16	—.383	35	35	—	Hazy	—.391	37	37	—	Hazy	—.411	36	36	—	Overcast
●	M.	17	—.396	33	33	—	Ditto	—.378	37	37	—	Do. & Cold	—.355	33	33	—	Ditto
	T.	18	—.343	33	33	—	Foggy	—.310	36	34	2	Ditto	—.295	34	34	—	Ditto
	W.	19	—.257	33	32	1	Hazy	—.217	37	37	—	Hazy	—.202	35	34	1	Ditto
	Th.	20	—.223	31	31	—	Frosty	—.322	40	40	—	Overcast	—.348	32	32	—	Fine
	F.	21	—.397	34	34	—	Hazy	—.363	37	37	—	Hazy	—.210	37	37	—	Overcast
	S.	22	—.397	34	34	—	Rain	—.031	37	37	—	Rain	29.988	41	41	—	Rain
	S.	23	29.593	42	42	—	Ditto	29.478	45	45	—	Ditto	—.386	45	45	—	Ditto
☽	M.	24	—.318	42	42	—	Ditto	—.312	42	42	—	Drizzly	—.478	41	41	—	Ditto
	T.	25	—.700	32	32	—	Clear	—.790	35	32	3	Very Clear	—.954	35	35	—	Clear
	W.	26	—.949	30	30	—	Frosty	—.857	34	34	—	Overcast	—.472	38	38	—	Heavy Rain
	Th.	27	—.706	34	34	—	Clear	—.762	41	37	4	Clear	30.065	32	32	—	Very Clear
	F.	28	30.247	30	30	—	Do. & Frosty	30.304	39	39	—	Do. very fine	—.383	28	28	—	Sharp Frost
	S.	29	—.247	38	38	—	Overcast	—.235	43	43	—	Rain	—.248	45	45	—	Rain
	S.	30	—.169	46	46	—	Rain	—.212	51	51	—	Ditto	—.313	45	45	—	Ditto
⊙	M.	31	—.487	32	32	—	Clear	—.545	41	2	9	Clear & Fine	—.601	32	32	—	Very Clear
			30.094	36.96	36.93	0.03		30.095	41.74	41.03	0.71		30.119	38.12	38.09	0.03	

DECEMBER.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.
1	56	48	57	43	SW	Little		.22
2	56	44	57	41	——	Strong		.51
3	53	39	60	35	——	Brisk		.02
4	50	34	59	29	W	Little		
5	48	35	51	28	NW	Ditto		.01
6	47	29	54	23	W	Ditto		.20
7	47	32	53	25	NW	Ditto		.09
8	44	26	52	22	N	Ditto		
9	35	25	37	23	NW	Ditto		
10	44	32	48	28	——	Ditto		
11	45	35	47	32	SW	Ditto		
12	45	39	47	38	——	Ditto		
13	46	37	47	36	W	Ditto		
14	46	32	51	25	N	Ditto		
15	45	28	51	20	SE	Ditto		
16	38	31	38	31	——	Ditto		
17	37	33	37	30	N	Ditto		
18	38	31	40	29	NE	Ditto		
19	42	26	43	19	SE	Ditto		
20	43	28	46	25	——	Ditto		
21	38	30	38	30	——	Ditto		
22	46	37	46	36	——	Ditto		.30
23	46	42	46	41	——	Ditto		.03
24	43	31	43	24	——	Ditto		.01
25	37	21	46	14	N	Ditto		
26	41	32	41	27	S	Ditto		.20
27	44	27	54	20	W	Ditto		
28	40	25	50	18	——	Ditto		
29	49	43	49	42	SW	Ditto		.08
30	51	32	51	28	W	Ditto		.05
31	44	30	49	23	——	Ditto		
	44.64	32.71	47.67	28.54				1.72

Remarks.

The temperature of this month was below the average by two degrees. The amount of rain was moderate; but the weather was throughout exceedingly damp. About half an inch of rain fell on the 2nd in heavy showers with thunder and lightning. There was no rain between the 7th and 22nd. Fogs were prevalent in the interval; and the state of the barometer was high and steady.

Mean Pressure from the 3 daily observations 30.102 inches.
—— Temperature .....Ditto..... 38°.94
—— Dew Point .....Ditto..... 38°.64
—— Degree of Dryness .....Ditto..... 0°.26
—— Degree of Moisture .....Ditto..... .991
—— Force of Vapour.....Ditto..... .269
Least observed degree of Moisture ..... .876
Maximum Temperature in the Shade..... 56.°
Minimum Temperature in ditto..... 21.°
Maximum Temperature in the Sun..... 60.°
Minimum of Terrestrial Radiation..... 14.°
Mean Temperature of External Air..... 38°.67

WINDS.

North .....4 days		N. East ....1 days	
South .....1 ..		S. East .....8 ..	
East .....0 ..		N. West .....4 ..	
West .....7 ..		S. West .....6 ..	

31 days.

Amount of Rain .....1.72 inch.

Monthly Mean Pressure, Temperature, and Dew Point, &c. of 1838; deduced from the Observations recorded in the preceding Journal.

1838. Months.	Pressure. Max.	Min.	Med.	Range of Barom.	Mean at Morn.	Noon.	Night.	Mean of the three Observations.	Temperature. In the Shade. Max.	Min.	Med.	Mean at Morn.	Noon.	Night.	Mean of the three Observs	In Sun's Rays. Max.	Min.	Terrestrial Radiation Max.	Min.	Med. of Sun and Radn.
Jan. .	30.447	29.328	29.926	1.119	29.949	29.911	29.922	29.927	49	—4½	27.79	27.12	32.06	28.29	29.15	55	14	37	—12	27.38
Feb. .	30.454	28.740	29.624	1.714	29.637	29.610	29.630	29.625	53	14	33.76	32.00	37.78	33.28	34.35	56	33	38	9	33.15
March	30.556	29.116	29.839	1.440	29.833	29.834	29.849	29.839	62	24	42.16	39.80	48.77	39.51	42.69	68	41	45	18	42.14
April	30.287	29.200	29.808	1.087	29.817	29.802	29.804	29.807	69	16	44.06	43.36	50.13	40.63	44.70	73	47	48	8	44.74
May .	30.416	29.414	29.906	1.002	29.922	29.891	29.908	29.907	78	26	52.27	53.32	62.48	47.93	54.57	100	66	48	17	57.07
June.	30.322	29.493	29.896	0.829	29.944	29.869	29.862	29.891	83	35	59.89	60.86	67.16	54.53	60.85	98	68	59	29	63.83
July .	30.283	29.620	29.992	0.663	30.004	29.993	29.980	29.992	84	40	62.78	62.03	69.29	57.55	62.95	107	72	58	33	67.93
Aug.	30.249	29.249	29.936	1.000	29.930	29.922	29.946	29.932	82	38	61.58	61.54	69.00	56.35	62.29	97	72	60	32	66.53
Sept.	30.549	29.272	30.002	1.277	29.998	29.981	30.021	30.000	76	34	56.16	53.40	63.20	52.36	56.32	98	59	54	26	60.18
Oct. .	30.457	29.280	29.989	1.177	29.993	29.979	29.991	29.987	66	26	50.48	49.80	56.58	49.38	51.92	76	53	53	18	51.86
Nov..	30.462	28.673	29.566	1.789	29.556	29.546	29.579	29.560	61	23	42.49	39.80	45.73	40.30	41.94	70	39	49	15	42.79
Dec. .	30.601	29.312	30.111	1.289	30.094	30.095	30.119	30.102	56	21	38.67	36.96	41.74	38.12	38.94	60	37	43	14	38.24
Aver.	30.421	29.224	29.882	1.197	29.888	29.869	29.884	29.880	68.25	24.37	47.67	46.66	53.66	44.85	48.39	79.83	50.08	49.33	17.25	49.65

1838. Months.	Hygrometer indicating Dew Point. Mean Dew Point at Morn.	Noon.	Night.	Mean Dew Point.	Mean Force of Vapour.	Mean degree of Dryness.	Mean degree of Moisture.	Least degree of Moisture.	Scale of the Winds. N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Days.	Rain. In.	Pts.
Jan. .	26.58	30.35	28.29	28.40	.190	0.75	979	735	5	11	5	3	4	1	0	2	31	0.27	
Feb. .	30.85	34.82	32.71	32.79	.222	1.56	948	731	3	8	7	4	2	3	1	0	28	2.22	
March	38.87	39.74	39.29	39.30	.274	3.39	878	504	3	4	3	2	5	5	4	5	31	0.86	
April	39.13	38.60	38.73	38.82	.270	5.88	803	438	10	1	0	1	2	5	4	7	30	0.52	
May .	46.93	45.74	46.29	46.32	.355	8.25	754	235	1	15	2	1	6	3	1	2	31	0.92	
June.	57.63	57.93	54.26	56.61	.501	4.24	873	457	2	2	4	0	12	7	3	0	30	3.65	
July .	58.45	58.36	56.71	57.84	.523	5.11	865	506	2	1	0	1	4	11	9	3	31	2.19	
Aug.	57.93	58.23	55.90	57.35	.514	4.94	856	486	2	0	0	1	6	14	4	4	31	1.23	
Sept.	52.53	56.33	52.00	53.62	.453	2.70	879	506	2	4	3	0	2	4	8	7	30	2.08	
Oct.	48.10	52.03	49.06	49.73	.396	2.19	929	506	2	7	1	1	2	9	5	4	31	2.36	
Nov.	39.47	44.50	40.13	41.36	.296	0.58	976	812	2	7	9	5	2	4	1	0	30	3.55	
Dec. .	36.93	41.03	38.09	38.68	.269	0.26	991	876	4	1	0	8	1	6	7	4	31	1.72	
Aver.	44.45	46.47	44.28	45.07	.355	3.32	894	566	38	61	34	27	48	72	47	38	365	21.57	

The preceding Table, as regards Temperature, and the Dew Point, is in terms of Fahrenheit's scale; the following are reductions of the same to those of the Centigrade and Reaumur's Thermometers.

Centigrade Thermometer.

1838.	Temperature.												Hygrometer indicating Dew Point.				
	In the Shade.			Mean at			Mean of the three Observations.	In Sun's Rays.		Terrestrial Radiation.		Med. of Sun and Radiation.	Mean Dew Point at			Mean Dew Point.	Mean degree of Dryness.
Months.	Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.		Morn.	Noon.	Night.		
Jan. .	9.44	-20.27	-2.33	-2.71	0.03	-2.06	-1.58	12.77	-00.10	2.77	-24.44	-2.56	-3.01	-0.91	-2.06	-2.00	0.41
Feb..	11.66	-10.00	0.97	0.00	3.21	0.71	1.30	13.33	0.55	3.33	-12.77	0.63	-0.63	1.56	0.43	0.43	0.86
March	16.66	-4.44	5.64	4.33	9.31	4.17	5.93	20.00	5.00	7.22	-7.77	5.63	3.81	4.30	4.05	4.05	1.88
April	20.00	-8.88	6.70	6.31	10.07	4.79	7.05	22.77	8.33	8.88	-13.33	7.07	3.96	3.66	3.73	3.78	3.26
May .	25.55	-3.33	11.26	11.84	16.93	8.85	12.53	37.77	18.88	8.88	-8.33	13.92	8.29	7.63	7.93	7.95	4.58
June.	28.33	1.66	15.49	16.03	19.53	12.51	16.02	36.66	20.00	15.00	-1.66	17.68	14.23	14.40	12.36	13.67	2.35
July .	28.88	4.44	17.10	16.68	20.71	14.19	17.19	41.66	22.22	14.44	0.55	19.96	14.69	14.64	13.72	14.35	2.83
Aug.	27.77	3.33	16.41	16.41	20.55	13.52	16.82	36.11	22.22	15.55	0.00	19.18	14.40	14.57	13.27	14.08	2.74
Sept.	24.44	1.11	13.42	-11.88	17.31	11.31	13.51	36.66	15.00	12.22	-3.33	15.65	11.40	13.51	11.11	12.01	1.50
Oct..	18.88	-3.33	10.26	9.88	13.65	9.65	11.06	24.44	11.66	11.66	-7.77	11.03	8.94	11.12	9.47	9.85	1.21
Nov .	16.11	-5.00	5.82	4.33	7.62	4.61	5.52	21.11	3.88	9.44	-9.44	5.99	4.15	6.94	4.51	5.20	0.33
Dec..	13.33	-6.11	3.70	2.75	5.41	3.40	3.85	15.55	2.77	6.11	-10.00	3.46	2.73	5.01	3.38	3.71	0.14
Aver.	20.13	-4.23	8.70	8.14	12.05	7.13	9.10	26.57	10.04	9.62	-8.19	9.80	6.91	8.03	6.82	7.25	1.84

Reaumur's Thermometer.

1838.	Temperature.												Hygrometer indicating Dew point.				
	In the shade.			Mean at			Mean of the three Observations.	In Sun's Rays.		Terrestrial Radiation.		Med. of Sun and Radiation.	Mean Dew Point at			Mean Dew Point.	Mean degree of dryness.
Months.	Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.		Morn.	Noon.	Night.		
Jan. .	7.55	-16.22	-1.87	-2.16	0.02	-1.64	-1.25	10.22	-8.00	2.22	-19.55	-2.04	-2.40	-0.72	-1.64	-1.59	0.30
Feb. .	9.33	-8.00	0.67	0.00	2.56	0.56	1.03	10.66	0.44	2.66	-10.22	0.50	-0.50	1.24	0.31	0.33	0.68
March.	13.33	-3.55	4.51	3.46	7.45	3.33	4.74	16.00	4.00	5.77	-6.22	4.50	3.04	3.43	3.27	3.23	1.50
April.	16.44	-7.11	5.35	5.04	8.05	3.83	5.64	18.22	6.66	7.11	-10.66	5.65	3.16	2.71	2.98	3.02	2.61
May .	20.44	-2.66	9.00	9.47	13.54	7.07	10.02	30.22	15.11	7.11	-6.66	11.14	6.63	6.18	6.36	6.36	3.66
June.	22.66	1.33	12.39	12.82	15.62	10.00	12.81	29.33	16.00	12.00	-1.33	14.14	11.39	11.34	9.91	10.93	1.87
July .	23.11	3.55	13.67	13.34	16.63	11.35	13.75	33.33	17.77	11.55	0.44	15.96	11.75	11.71	11.05	11.48	2.26
Aug.	22.22	2.66	13.13	13.12	16.44	10.81	13.45	28.88	17.77	12.44	0.00	15.33	11.52	11.65	10.72	11.26	2.18
Sept.	19.55	0.88	10.73	9.50	13.85	9.04	10.80	29.33	12.00	9.77	-2.66	12.52	9.11	10.80	8.88	9.60	1.19
Oct. .	15.11	-2.66	8.21	7.90	10.91	7.71	8.85	19.55	9.33	9.33	-6.22	8.82	7.15	8.89	7.58	7.87	0.96
Nov.	12.88	-4.00	4.65	3.46	6.09	3.67	4.41	16.88	3.11	7.55	-7.55	4.79	3.31	5.53	3.62	4.16	0.25
Dec. .	10.66	-4.88	2.96	2.19	4.32	2.71	3.07	12.44	2.22	4.88	-8.00	2.76	2.18	4.01	2.71	2.96	0.11
Aver.	16.11	-3.39	6.96	6.51	9.62	5.70	7.27	21.26	8.03	7.69	-6.55	7.83	5.53	6.42	5.45	5.80	1.47

XXXIX. *Upon raising Coniferous Plants from Seed.* By Mr. George Gordon, *Under Gardener, in the Hardy Department of the Society's Garden.*

Read December 3, 1839.

The Society having received and distributed a considerable quantity of seeds of several valuable and new species of Pinus, from their collector in Mexico, I am induced to believe that the following account of the manner of raising Coniferous Plants in the Society's Garden may be worth knowing; especially as some eminent cultivators of such plants have failed in raising several of them, although none of the species of which seeds were distributed have failed in the garden of the Society.

Every one who has had any experience in raising seedling Pines, especially those belonging to the section of Pinus proper, must be well aware that they are extremely subject to damping off, just above the ground, shortly after they have come up, and generally when they are about four or five days old, more particularly if it is wet weather at the time; and it then frequently happens that not a single plant is saved, although every seed should have vegetated. Having myself known the great difficulty of preserving such plants, I was induced to try various experiments in the hope of finding a remedy for the evil. I fully tried the effect of sowing the seeds in various mixtures of Peat, Sand and Loam, mixed in various proportions from nearly all Sand, to nearly all Peat, or Loam as well as Sand, Loam and Peat, separately, and also Leaf Mould, a soil strongly recommended by some, but in all respects as bad as Peat itself. Different depths too were tried, from laying the seeds on the surface of the earth, to covering them three-fourths

of an inch deep; the pots or pans in which the seeds were sown, were placed in various temperatures, from the open air to the hot bed; some of them were even placed over the hot flue, some were covered with a bell-glass, others were left exposed. The result of my experience is, that the system hereafter detailed is the only certain and sure one for Coniferæ of all kinds; I should however mention that there are some species which succeed tolerably well under other modes of management, particularly if sown in the open air, and when the seeds are fresh. These are more especially species of Picea, Abies, Larix and Cedrus, as well as of Juniperus, Cupressus and Thuja; but they must be sown as early as possible in the spring or summer, for if sown in the autumn or winter they also are subject to damp off, particularly if any artificial heat is used: a thing absolutely necessary if the seeds are sown in winter, or have been long gathered, or damaged by being overheated on the journey. If the rules which I am about to recommend are attended to, I have no doubt that many Fir seeds, now rejected as worthless, or as incapable of germinating when sown, will be found to succeed, as is, I think, sufficiently proved by the following example.

In the autumn of 1838, the Society purchased from Mr. Charlwood, some seeds of Abies Cephalonica which had been heated by being sent over in a close cask, perhaps also by having been packed in a green state and by the cask having been stowed away in the close hold of the ship. When the seeds were sent to those who had ordered them, they were declared to be dead; one Gardener threw behind the fire the seeds which his master had purchased, and even some nurserymen would not sow the seeds, but returned them, believing it useless to attempt to raise them. I must confess, that I myself considered their appearance very unpromising, but having before found other Fir seeds looking equally ill, which nevertheless vegetated, I gave these a fair trial, and with a little care, succeeded in raising about five hundred

healthy plants. The seeds were sown in pans filled with Loam only, and were covered nearly half an inch deep; care was taken that the Loam was pretty dry when the seeds were sown, and little water was given until after they began to vegetate. Wet or damp is very injurious to fresh sown Fir seeds before vegetation commences, particularly if, like those I am speaking of, they have received any injury.

If Fir seeds are sown late in the autumn, in winter, or early in the spring, the pans or pots should be placed over the flue of the hothouse, or other place, where there is a strong *dry* heat which is not too violent; but if they are sown late in the spring, or in summer, they may be placed in a much cooler place; still great care must be taken that, directly vegetation commences over the hot flue, the seed pans are removed to a much cooler place, where there is plenty of light and air to harden the seedlings by degrees; water must still be given sparingly, and finally they may be removed to a cold pit, where they can be kept free from frost the first Winter; as damp is particularly prejudicial to them, they should be exposed to the open air every fine day, and when large enough, they may be potted off into small pots; no Peat should on any account be employed in the mixture in which they are potted, but if the Loam is stiff, a little Sand may be used, not much however, for I find if there is much Sand in the compost the plants become weakly.

In conclusion the rules I have to recommend for raising Coniferous seeds are the following:

1. Always to sow the seeds directly they are received, whether in midwinter, or midsummer, or any other time of the year.

2. Always to sow the seeds in *pure Loam*, not to use the least particle of Peat, and as little Sand as possible. All the seeds experimentally sown in Peat, or any mixture in which it was used, damped off, especially when there was more Peat than Loam used in the mixture. The only chance of saving young plants raised in

such a compost is to keep them as dry as possible, and to pot them off the first or second day after they are fairly up; for if left twenty four hours longer it is very probable they will nearly all have damped off, particularly if a little water is given, or it happens to be damp or wet weather at the time.

3. Always to sow the seeds in dry Loam; to give very little water until the seeds are fairly up, and then only sparingly.

4. To cause the seeds to vegetate as quickly as possible after sowing, more particularly if the seeds are old or damaged, taking great care however, that, before they are fairly above ground, they are removed to a much cooler place, where there is plenty of light and air and they can be secured from frost.

5. Not to let the young seedlings remain very long in the seed pots before they are potted off, and to give plenty of air to them after they are potted, with as little artificial heat as possible.

6. Always to plant them out in the open ground after the second year. If Pines are kept any length of time in pots, especially if not regularly shifted twice a year, their roots become pot-bound, and as they are a race of plants which make few roots, and those always near the surface of the ground, they are almost sure, if confined many years in pots, to be blown over or to one side, and when this has once happened they hardly ever become firm, or make handsome trees.

XL. *On the Improvement of the Wild Carrot.* *By* M. Vilmorin, *F. M. H. S.*

Read March 3, 1840.

The greatest part of our kitchen garden plants, and especially those which have been brought to the highest state of perfection, and rendered the most useful, are evidently deviations from wild kinds, modified by the skill and labour of man. This may be proved by comparing together in the two different conditions, those with which we are acquainted in their wild states, the cabbage, the carrot, the turnip, &c.

This fact, considered either generally or in detail, presents several subjects for study of great interest. On the one hand, it is connected with one of the most important problems of natural philosophy, that of the laws which govern the species and its variations; on the other hand, it affects Botany properly so called, and Physiology; the former as regards the determination of the species to which the numerous cultivated varieties belong, the second as regards the changes effected in the proportions and the developement of the organs orparts of a plant. But the most interesting perhaps, and at the same time the most useful, point of view under which these modifications can be considered, is that of *the means by which they have been effected.*

It is a nearly new enquiry with us. The habit of seeing our alimentary plants under their present forms, their utility, even the common and daily use of them, have caused them to be considered in general, as entirely natural productions, with nothing particular in their origin; neither has the curiosity of the cultivator been excited. Botanists, on their side, have long scorned to give their at-

tention to garden varieties; and they have on this account been much overlooked.*

If, however, attention be confined to this subject, and we enquire how the feeble, filamentous, and scarcely fleshy tap-roots of some wild plants have been transformed into our bulky kitchen-garden roots; or how the head of the cabbage has been created; or by what process the tapering leaves upon the stalk of the wild cabbage have been agglomerated and compressed into a compact and fleshy mass, we shall find ourselves embarrassed by the enquiry. Modern horticulture, advanced as it is in many respects, presents no similar example. Some new vegetables indeed have been introduced into the gardens of our own days, or during the last century; and they have remained such, or nearly such, as they were originally. Amongst them, one may instance the *Sea-Kale*; the culture of which during the last 40 or 50 years has become general in England, where it is the object of much care; nevertheless, the plant has, hitherto, experienced no sensible changes in its form or its dimensions.† It is the same with *Tetragonia expansa*, which is now what it was at its first appearance, and of other kitchen-garden kinds of more recent introduction.

As for our old vegetables, they have been transmitted to us ready formed by the generations which have preceded us. The origin of most of them is traceable to unknown times; there are even some of which the wild sorts exist no longer, or which have

* M. Decandolle, I believe, is the first among the great botanists who has caused the necessity of studying these plants to be felt; he has insisted upon it in several of his works, and resolving to add application to precept, he has published an important paper on the species and varieties of the cabbage and horseradish cultivated in Europe. A very estimable and learned man, Duchesne, has with similar views studied Strawberries and Gourds, of which he has given Monographs.

† Some Amateurs, who dwell in the neighbourhood of the coasts where the Sea-Kale grows, have assured me that it is not uncommon to find specimens of it, in its natural state, as fine and as much developed as those which are seen in the gardens.

not been found by botanists, and which we possess only in the domestic or cultivated state. It is very true that these plants are still in the course of improvement by us, and that we daily obtain new varieties of them ; but amongst such variations of species already changed, and the first amelioration of a wild plant, a fundamental difference exists of which it is important to give some account.

When by any means, a species has been made to deviate from its primitive condition, the somewhat artificial race or races, which have resulted from it, are essentially variable. This is what we see in our garden kinds, which have a constant tendency to sport, generally in order to degenerate, (in our opinion,) that is to say, to return to their first stock; often also by contrary and different influences, (for this phenomenon is very complex in its causes as in its effects,) to wander still further from it, or to experience new changes. The natural species, on the contrary, is essentially fixed and stable; with rare exceptions, it varies only within the limits assigned to the different individuals ; differences which disappear and are renewed with those individuals, without leaving any lasting traces, and without giving birth to new races.

This explains how we obtain, so easily, varieties of our kitchen-garden plants already altered and ameliorated ; whilst, if we bring into culture a species still in its natural state, we do not see it sensibly improve. These improvements however are possible ; they have formerly been effected by man in many species, but neither the tradition of the means, nor the practice itself, has been handed down to us.

It might be supposed, and this opinion has sometimes been expressed to me by sensible men, that in order to create improved alimentary varieties, nothing more has been requisite than abundant nourishment and great care in garden culture ; but an attentive examination does not allow me to adopt this opinion except in a very restricted sense. Certainly care is among the number of indispen-

sable means, but it is also beyond a doubt that of itself it is insufficient. Give to the wild cabbage very abundant nourishment, treat it with a gardener's care, you will procure for it a more vigorous developement, larger dimensions; its leaves will become more ample, its stems higher; you will convert it into the *chou cavalier* or the *chou vert branchu*; but by these means alone you will never make of it a headed cabbage.* Something else certainly has been wanting—What other thing? Or, rather what other things? That is the problem to which I invite attention, not for the cabbage only, but for very many other plants.

Being often occupied upon this enquiry, I have endeavoured to satisfy myself about it by experiments; I have pursued some upon different plants with a view to ameliorate them; upon the perennial lettuce, or Lactuca perennis, on the Tetragonia, the Solanum stoloniferum, the Brassica orientalis. Many years of trials have not enabled me, at present, to obtain any sensible modifications of these species. But the wild carrot, which I had comprised in the same trials, has improved, on the contrary, in the most decided manner; in the space of three generations I have obtained roots of it as fleshy and as large as those of the Garden carrot. I have the honour to send to the Horticultural Society some specimens of them, and I add to them as a point of comparison and that a judgment may be formed of the advance gained, some wild roots, proceeding from the same fields in which were gathered the seeds for my first trials.

This is the history of the experiment.

In March, 1832, I made, at Verrière near Paris, in a soft and deep earth, my first sowing of wild carrot. All came up; I obtained no root better than those of the fields.

In 1833, the 26 April, I tried here, at Barres, Loiret, where the

* Of this I have now an example before me: for two years I have been trying the *Brassica sylvestris*, for the seeds of which I am indebted to the politeness of Mr. Loudon and the Rev. Thomas Bree; the most vigorous individuals of them are those which are the least disposed to form a head.

earth is stronger, a new sowing. It sprung up very clean, the plants became very strong, but all still ran to flower. The roots were larger than those of the fields, but I should say, worse on account of their consistence and their strong ramifications. Two other sowings, made at Verrière the 15 May and 22 June following, also ran to flower to a great extent but not entirely. They had come up freely like the preceding, but very unequally and in succession ; some seeds germinated during all the summer. Amongst these late plants, several did not run to flower and five or six made tolerably fleshy roots, about half an inch in diameter, and resembling very ordinary garden carrots.

These roots replanted the following spring produced seeds which were sown in 1835. A considerable portion of this crop still ran to seed, but the proportion was much less than it had previously been. The plant had already experienced a remarkable change ; at the time of drawing them, about a fifth part was found to consist of pretty good carrots, small and middle sized, but a little fibrous, some even quite well made and good. This second generation presented a good choice of stock plants, which were replanted and produced seed in 1836.

In 1837 I obtained from these seeds, a third generation of roots very considerably improved ; many of them were very large and fleshy, some exceeded the weight of a kilogramme. The largest were in general coarse and ill shaped ; but others were found perfectly good in every respect, equalling the best garden carrots. The refuse of this crop amounted to about a third part, consisting of forked branched roots ; but most even of these were fleshy and eatable. Few plants ran to seed, at most not above a tenth part. In 1838 I made with the same seed a pretty considerable sowing in the fields ; the majority of which has likewise yielded me very good produce.

Last year, 1839, I raised the fourth generation. The roots have been in general less large than those of 1837, because they have

suffered much from drought ; but the quality of the whole has been better, the proportion of bad much less, and that of runaways almost nothing.

In order to explain more distinctly the progress of the principal modifications, I will here give a summary of them in another form, at the same time adding some essential details which I have purposely omitted above, to avoid too frequent repetitions.

Form and Bulk. 1st Generation 1833, five or six roots, (amongst a large number) were very indifferent, ill formed, scarcely middle-sized, but tolerably fleshy.

2nd Generation. About a fifth part of the carrots were middle-sized and small, tolerably good, some were even quite good. They were, in general, extremely long, diminishing in size too suddenly, and drawn out like long rats' tails.

3rd Generation. The general form was much less lengthened, and the roots had increased considerably in size. I speak of the mass ; for some were, and still are, found very thready. Some were short, nearly of the form of the Breteuil carrot ; the best being replanted and resown separately, generally reproduced this form. In this generation the proportion of good carrots was about two thirds.

4th Generation. Though the size was, as I have said, less large than in the preceding generation, the form and proportions of the root were nevertheles ameliorated ; the lower part was more plump; upon the whole it was a better specimen. The refuse of this crop amounted to only about a tenth part.

Colour. The white colour and the yellow, commonly rather dark, made their appearance simultaneously, from the time of the small crop of 1833, and have done so constantly since then in all the other crops, the first being always in the larger proportion. The yellow being replanted apart, sometimes produce white in considerable numbers, and reciprocally ; some yellow being almost always found in the white crop ; (this variation is likewise remarked in some

of the old varieties, especially in the Breteuil.) The dark yellow began to appear in the crop of 1837, but it was very slightly reproduced. This shade is difficult to fix; it passes to the lemon colour, the white, sometimes to the pale red (orange).

Two roots of a dull violet, or the colour of wine lees, were found in the crop of 1835; they were spoiled in the winter and I was unable to obtain any race from them; 2 or 3 others appeared again in 1837, but they were so bad that we cast them aside. Many had only the neck stained with the same colour; amongst them however one was so fine and clean that I replanted it by itself. This year it yielded very few individuals of the same character; but its produce which has varied from white to lemon colour, has generally been excellent.

The red colour appeared for the first time in the third generation in 1837, and in very trifling proportion, perhaps one in three or four hundred. Contrary to the yellow, it became immediately fixed, the seeds of these first roots reproduced this year almost all red carrots more or less dark-coloured. They are, in general, coarse and rough on the surface. One of them, which I cut, was red only in the rind, or cortical layer, the centre was of a pale yellow.*

Disposition to run. It has been seen that at first the crop of March and of April ran to seed totally, and even those of May and June almost entirely.† This disposition became weaker in each

* The same effect appears in a more remarkable manner in the violet carrot; under the rind, which is of a deep violet, the interior is sometimes found of a fine yellow.

† At the time of making these first trials, I wished to ascertain if shortening the stems would produce any favourable influence on the root; consequently a certain number of plants were submitted to a rigourous and successive pinching as they grew up; they were pinched off just above the neck, taking care to preserve entire the radical leaves. Thus these plants would develope neither stems nor flower branches, but the roots gained nothing by this suppression; they were not less hard than those of the individuals which had run up freely; they even appeared to us more branched.

generation in a very sensible degree, and in an almost exact relation with the enlargement of the root. In the present day the wild carrot has, in this respect, arrived at the same point as the old varieties; it no longer runs, or at least not more so than the latter. It is thus become truly biennial from being annual, which it was at starting. This effect is very remarkable, and we may reasonably conclude from thence, that naturally the carrot is in truth annual, and that cultivation alone has rendered it biennial.

At the point at which it has now arrived, the wild carrot is almost confounded with the garden carrot; nevertheless, it still retains some characters, which will perhaps be afterwards effaced, but which for this very reason it may be well to notice. Thus, it is not yet completely tap-rooted; a certain number of roots are to be found fork-shaped, and fibrous; and among the good and fleshy ones, several have a coarse, and as it were, rugged appearance on the surface. There is also something particular in the habit and aspect of the plant. When the individuals are far apart and can extend themselves freely, the petioles and the leaves lie down and display themselves almost horizontally upon the soil; the foliage is of a harsher green, and darker than in most of the old varieties. In the first year the root penetrated deeply into the earth, it was necessary to search one and sometimes two inches in order to discover the neck. This disposition is still observable, but it seems to me to diminish in proportion as the root increases in size and diminishes in length. The flesh is more compact, rather firmer, and of greater consistence than that of the garden carrots; it appears to contain less water of vegetation; it is however as easily cooked, is very sweet and of excellent quality.

From the long details into which I have entered upon this sort of creation, it must not be concluded that I consider it as a real victory; we already possess the improved carrot, under numerous forms and shades: the analogy is too great for a vegetable novelty to be perceived. It is nevertheless not impossible that from this

renovated stock, if I may so call it, something of direct utility may be derived ; for example, a very robust and large race, particularly appropriate to field cultivation. It is to this that I am now directing my attention, and I trust I may succeed. Even as a garden plant, it is possible that the wild carrot may furnish some interesting and good variety. Besides it is not in the light of these accessory advantages, supposing they should be realized, that this experiment ought to be considered, but rather in that of the general question respecting the modifications and amelioration of wild plants. Indeed, the study of this interesting question has been my only object in the researches of which I have now given an account.

XLI. *Upon forcing the Peach Tree.* *By* Mr. Robert Errington, *Gardener to* Sir Philip De Malpas Grey Egerton, Bart., M. P. F. H. S., *Oulton Park, Cheshire.*

Read January 21, 1840.

I herewith send an account of the extraordinary Peach Tree, at Oulton Park, the Seat of Sir P. De M. Grey Egerton, Bart., for the produce of which the Horticultural Society of London was pleased to award four medals, in four successive years. I will first describe the house, the time and mode of planting, &c., and then add some account of the general management of the Peach, according to my practice.

The tree in question is of the Noblesse kind, according to the Horticultural Society of London; the house is metallic, built by Mr. J. Jones of Birmingham, it has an angle of fifty degrees, with an upright front sash of three feet from the ground level, and was completed by the 1st of January 1832. It is thirty feet long by twelve feet wide, and is furnished with one trellis only, which runs parallel with the roof at the distance of fourteen inches, excepting the base of the trellis, which meets the ground at thirty-six inches from the front lights, thus allowing a front walk to give air, &c., the front wall is on arches, and the tree planted inside, consequently it has roots both inside and outside. It is heated in common with two other metallic houses by one boiler, on the plans of Mr. J. Jones of Birmingham; nothing can in my opinion excel the mode of heating; the roof glazing is done in the curvilinear way, the laps being leaded with a hole in the centre of the curve for the escape of condensed steam. The border for the Peach was excavated

to the depth of forty-two inches, and the width of twenty-one feet; the subsoil a clean red sand presented an inclined surface of nearly one inch to a foot.

After laying a complete system of drainage, the whole surface was covered one foot in depth with old bricks and stones; on this was laid three inches of lime rubbish, out of which all small particles had been carefully sifted. The lime rubbish being formed to an even surface was covered entirely over with thin turfs of heath soil, cut about a foot square, and placed horizontally, barely touching each other; and finally a sprinkling of small gravel stones was swept into all the crevices; the whole was now covered to the depth of twenty-four inches with a compost as follows:

Good Maiden Loam, fresh from an old pasture, half way between strong and light, of a yellow colour, 12; Leaves from the park in a fresh state, 3; Horse Dung, 2; Sharp Sand, 1; Bone Waste, 2; these ingredients were of course thoroughly blended together.

The largest, cleanest and best formed tree on the open walls was selected, and the roots, having been cut the year previous, to check luxuriance, were of course in good condition for removal. The greatest care was taken during the process of removal, as to preserving the roots free from wounds, &c., but no soil was left adhering to them; they were however kept continually wet until the tree was fixed in its proper situation. The tree was so large that it required ten men to carry it to the hole, and after having all the wood carefully strapped together in groups, it was lifted through the roof of the house, and thence lowered into its situation. The time of removal was the end of January, the pruning knife had been most severely applied to the young wood previous to removal, more especially as regards thinning, but the old wood was not interfered with, as I have a strong objection to cutting large or old wood from Peach trees, unless in cases of strong necessity.

The tree once placed in its situation every fibre was of course as carefully trained as the shoots, taking care to carry a large portion

of the superior roots through the front arches into the outside border. In the first week of February the tree was dressed all over with a mixture of soft soap, sulphur, and tobacco water, rubbed carefully into every crevice, and when perfectly dry, the wounds caused by pruning were coated over with thick paint.

Towards the middle of February the water was turned on the house, but the heat for the first fortnight did not exceed fifty degrees by day, and thirty-six by night. The house was steamed profusely morning and night all the season, with the exception of the flowering time, and during the ripening of the fruit. After the blossoms were set the heat was increased slowly, and for some weeks was about sixty degrees by day, maximum, and allowed to sink generally as low as thirty-eight degrees at night; indeed I have had it as low as thirty-four degrees at night, when the fruit were as large as Peas, without any mischief whatever.

The tree ripened about eight dozen of very good Peaches in the same summer in which it was planted, and during that with the succeeding seven years, it has produced at least two thousand four hundred large and fine fruit; the largest Peach I ever gathered from this tree weighed twelve and a half ounces; I have however gathered hundreds of from nine ounces to eleven ounces in weight. The tree is now, December 1839, exposed to the weather and is full of excellent wood, covering completely the trellis, a surface of four hundred and eighty feet.

General management of the Peach Tree as practised at Oulton Park.

I will begin with the root; and this leads me to remark that the Peach, in my opinion, as well as most other tender fruit trees, is planted in borders far too deep, as well as too rich. It is of course imperative on the planter to take the utmost care that no stagnation of any kind be permitted to take place, not only as regards drainage, but in choosing soil of a proper texture. A loam about half way between stiff and sandy, I find the best; and in my opinion, the less

manure is mixed with it the better, providing the loam be what is termed "Maiden Soil," from old rest land. If any manure be considered necessary, it should be chiefly Bone Manure, on account of its decomposing very slowly, and of course gradually enriching the soil. It is by the wasteful and indiscreet use of dung, that the Peach is forced to produce "Robbers" or over luxuriant wood, and if these Robbers are not stopped with the finger and thumb, when only a few eyes in length, the necessary consequence is, that the true bearing wood is both robbed of its due share of sap, by the exclusion of light and prevented from attaining a due degree of ripeness. If Peach Trees show any signs of weakness after bearing a few years in soil of the description I have recommended, the remedy is quite simple; it is only having recourse to top dressing, laying it on heavily in the Winter and removing a portion in the Spring; heavy top dressing is in my opinion extremely pernicious in the growing season. If this is not sufficient to renovate the tree, it is easy to add a prepared compost in a trench at the extremity of the roots. If any unnecessary luxuriance takes place in any of the fruit trees under my care, I cut the points of the roots without hesitation, taking care to reduce them in proportion to the degree of superfluous luxuriance. This root-cutting system I have pursued for seven years at least, and find it every thing that can be desired.

With regard to Winter pruning, I am not aware that there is any thing peculiar in my practice, unless it be that I thin my young wood to a very great extent. This may alarm some persons, who may be afraid of not getting sufficient fruit, but this plan with a continual thinning and disbudding in Summer, so as to lose no sunshine on the leaves of the shoots intended for the next years crop, renders the buds so plump and well ripened, that there need be no fear in that respect.

After the Winter pruning, I immediately stop every wound made by the knife, and every place whence proceeds gummy exudations, with a coat of thick white paint; this painting, if I may so term it, is

repeated, and perhaps a third time, on all the larger wounds. This I have found of eminent use, for I believe it is a tolerably well known fact, that the entrance of air and moisture into such wounds is in many cases the cause of premature decay. The wounds being dressed in this manner, I immediately stove the house with sulphur blended with sawdust and burnt in shallow pans, and afterwards dress the tree over two or three times with soft soap, sulphur and tobacco water, brushing it carefully into every bud and crevice with a painting brush; this mixture is not made so strong as recommended by some of our gardening authors, as I depend much on the careful brushing and flooding every part of the tree.

At the commencement of forcing, the same routine is pursued as before described, and I may here remark on the evil effects of high temperature at night, for as I before observed I have had my Thermometer as low as thirty-four degrees at night, when the fruit was as large as Peas without any injury whatever; now this has been through sheer necessity, for in my anxiety to get fruit early, I should have kept it probably to nearly fifty degrees could I have obtained that heat, but I am convinced that it would have been worse for the tree; for one of the necessary consequences that ensues in a case of the kind, is the elongation of the internode, as Botanists term it, which lengthening, if it be not the cause, is well known as a sign of barrenness. From the period that the fruit are beginning to swell off, until they commence ripening, my trees have most copious syringings and steamings, excepting that in the months of February or March, in cold dull weather, I am a little more niggardly of water, taking care especially that if I syringe in the afternoon, it be done early, so as to have the leaves dry by the evening; as a temperature of thirty-four degrees to forty degrees by night and a wet leaf would by no means agree. The house is of course fumigated twice or thrice, or in fact on the very first appearance of green fly. As for red spider, I seldom by this management see one.

The young wood through all the growing period receives the utmost attention; every robber is stopped with the finger and thumb as soon as about four eyes or buds long; every superfluous shoot that is not wanted for the next years bearing, is taken away, and all the inferior shoots, which are much below the proper strength, are trained with the growing points as nearly perpendicular as possible, in order to decoy the sap into them.

As soon as I perceive the least change towards ripening in the fruit, I stop the points of all the young wood, with the exception of a few of the weakest shoots at the lower part of the tree, and these I keep growing until the end of the season, in order to get, as I before observed, as much sap in them as possible. In the course of their ripening, abundance of air is given both night and day, and every leaf which shades the fruit is entirely removed. I need scarcely add that they cannot ripen too slowly; the slower they ripen if not absolutely starved the better. Syringing is of course withheld altogether, as well as the steaming, but as soon as the last fruit is gathered the tree is completely battered with water morning and evening, and the house shut up early in the afternoon with a thermometer of ninety to ninety-five degrees of sunheat when it can be obtained, and this course is persisted in until the leaves turn colour, when the heat by sunshine is allowed to range even higher still; I have had it as high as a hundred degrees, at three to four o'clock in the afternoon. By these means the wood is most completely ripened, and in pruning cuts more like Oak than wood Peach. During all the ripening process the border inside the house is allowed to become very dry indeed; in fact water is entirely withheld from the moment the least appearance of change in a single Peach is perceived towards ripening.

An opinion once prevailed very generally, that Peaches would not answer long under glass, unless the lights were removed during the rest season, this is however quite erroneous, as the lights have never been taken off the tree in question since it was planted.

Before I conclude, I must just observe, that without cleanliness in the leaf and wood, no soil or mode of training whatever can answer long for the Peach.

XLII. *On Heating by Hot Water. By* John Rogers, *Jun., Esq., F.R.S. F.H.S.*

Read April 21, 1840.

Having for some time past directed my attention to the best methods of heating Horticultural Buildings, I am induced to think that a few observations on that subject may not be unacceptable to the Fellows of the Horticultural Society. Many and various have been the expedients adopted for this purpose during the last twenty years, each possessing some peculiar recommendations, which are frequently more than counterbalanced by attendant inconveniences. On the whole there appears no doubt that the circulation of hot water in iron pipes is the best means hitherto devised for this purpose. Its peculiar advantages are the uniformity and durability of the heat so communicated, and its perfect and equable distribution to all parts of the building. It is moreover capable of effecting a considerable economy of fuel, but on this head its advantages are not so great as is commonly supposed, and depend much upon the construction of the apparatus. Where this is well-constructed and *well-managed*, the saving of fuel may amount to 25 per cent, over well-constructed and well-managed flues; but in a large proportion of the apparatus now in use, it will be found that the consumption of fuel greatly exceeds that of common furnaces.

This remark applies not merely to the earlier apparatus, where the power was inadequate to the work required, but even to the best constructed modern ones, and the waste of fuel arises from a misunderstanding of the nature of a hot water apparatus, and from an attempt to make it do that, which, if it be properly constructed, it is impossible that it should do.

It is a great desideratum with gardeners, as far at least as my experience goes, to *get up heat* in a short time, and their ordinary test of the excellence of a hot water apparatus is, how speedily they can get the water to boil. Where an apparatus is properly constructed this can seldom be effected without a most extravagant waste of fuel. The water in a hot water apparatus, constructed on the most perfect principles, will take as many hours to heat to the boiling point as the pipes which contain it are inches in diameter, and it will also cool in the same ratio. Four inch pipes will accordingly take four hours to reach the temperature of 200°, and they can be heated to the boiling point in one hour, only by the consumption of four times as much fuel as would suffice if properly applied, or in fact, allowing for the waste of heat by the chimney, which increases under such circumstances very rapidly, five or six times as much fuel as is really necessary will be consumed by a gardener zealous of the honour of his apparatus. It is of course possible, by having a furnace and boiler excessively large in comparison with the pipes, to construct an apparatus with four inch pipes which shall boil in an hour; but the necessary consequence will be that such a furnace would burn during every hour of the night four times as much fuel as can possibly be effective in heating the building to which it is applied.

If a house is to be heated rapidly, the pipes should be of the smallest diameter which is consistent with a free circulation, but it must be borne in mind that such pipes will also cool with equal rapidity; and, if the heat is to be maintained through the night, the furnace must be so constructed as to contain a large quantity of fuel, but only to allow of a very slow consumption, much after the manner of Dr. Arnott's Stove. Now such a furnace, though theoretically very easy, and practically not very difficult of construction, requires an almost scientific nicety of management not to be expected from common gardeners. There are moreover several objections to small pipes, one of the most material of which is this,

that the motion of water within them being retarded by *friction* in a much greater degree than in large pipes, they can never be brought to so high a mean temperature. So that, under similar circumstances of pressure, &c., 200 feet of one inch pipe could never be made to produce the same effect as 50 feet of four inch, though their surfaces would be nearly equal; besides which the original expense of the one inch pipe would be nearly three times that of the four-inch.

A little consideration will enable us to determine whether such rapid communication of heat be really essential to the efficiency of a heating apparatus. In hot-houses, where permanent heat is required, it is evidently unnecessary. The only place where it may be desirable is in buildings where occasional heat only is employed. Now if any one will take the trouble to note hourly the variations of the thermometer by night, in weather in which frost is so severe as to be dangerous, they will find that, instead of a sudden jump of 10° or 20°, the th ermometer begins to fall slowly an hour beforesunset, somewhat more rapidly afterwards, and continues falling steadily till about 11 P.M. After that time it falls still more slowly till 3 or 4 A.M., by which time it will have almost reached its minimum. Its variation will be something like three or four degrees per hour for the first four hours, after that about one degree per hour for the next two or three, and then from $\frac{1}{2}$ to $\frac{1}{3}$ of a degree till it has reached its minimum. Now it is evident that to meet this variation, supposing the temperature of the house to range exactly with outer air, an apparatus which occupies three or four hours in reaching its maximum, would be much more accurately adapted to the emergency than one which could be heated in an hour. But we may observe that, except in iron-roofed houses, that the temperature within the house does not keep pace with that of outer air, but falls much more slowly, owing to the specific heat contained in the objects within the building, which is gradually transmitted by the roof, so that in fact the necessity for rapid heating, even in green-houses, is really less than at first sight appears.

The real desideratum is a furnace so constructed that it shall contain fuel enough to supply the pipes with as much heat as they can radiate during the night, and which may be depended upon for burning steadily and perfectly whatever fuel is put into it. Not with that accurate precision requisite where the temperature of the house depends upon the exact amount of combustion per hour, but sufficiently slowly to allow the water to absorb the greatest possible portion of the heat generated. With such an apparatus, the fire being once effectually lighted, the gardener need be under no apprehension that the heat during the night will prove insufficient, though it may be several hours before the pipes attain their maximum temperature.

I have dwelt somewhat at large on this point because it is one on which much mistake exists, and under this misapprehension, the best apparatus may be condemned as defective, and a very imperfect one preferred and adopted in its stead—that which is commonly adopted as a criterion of excellence, being really a proof of defective construction.

There can be on the whole no doubt that three inch or four inch pipes are exceedingly preferable to smaller ones, where economy of fuel and uniform adjustment of the temperature for several hours, are the primary objects; where ornament or great economy of space is important, and economy of fuel is not much considered smaller pipes may be employed; but where rapid heating is considered essential, I believe it will be found best to have recourse to the old expedient of brick flues; and their attendant inconveniences must be considered as the price paid for this advantage real or imaginary. The most perfect construction of these has been so fully canvassed in the earlier volumes of the Horticultural Transactions that it is unnecessary here to enlarge upon it.

The next point to be noticed is the absolute amount of heat produced by any hot water apparatus, which depends upon the proportion between the surface of pipe and surface of external glass

in the building. The laws both of cooling by the glass and of radiation from the pipes have been so ably and accurately treated by Mr. Charles Hood in his most valuable treatise on hot water apparatus, that there is now nothing to desire on this head. An apparatus may be adjusted with the most minute accuracy to the work required of it. Formerly the most preposterous blunders were committed on this point,—almost all the earlier apparatus are incompetent to the work required of them, the quantity of pipe being utterly insufficient to produce the heat desired, while the boiler being large and of very defective construction, a vast quantity of fuel was burnt to waste; the gardener finding his heat deficient naturally stokes up his fire and throws on fuel in the hope of increasing it, but the only result of his labour is the more rapid destruction of the boiler itself. Until the publication of Mr. Hood's work above mentioned, the principle of circulation in hot water apparatus, was very little understood, most erroneous notions prevailed on the suject, and where the principles were unknown, and opportunities of experiment comparatively few, it was not to be wondered that practice was very defective. It must however be observed that if the earlier apparatus were mostly deficient in the quantity of pipe employed, many of those more recently erected err in the opposite extreme. The error arises not from any defect in the data or in the calculations, but from assuming, as the minimum of external air, a temperature which very rarely occurs in this country, and which lasts for so very short a time that no building has time to cool down to a corresponding temperature; the gardener is generally consulted as to the heat he requires, and if he states, as he probably may do, that he wishes to keep his greenhouse at fifty degrees and his stove at sixty-five degrees when outer air is five degrees or 0° the apparatus is constructed accordingly, and will of course be found excessive in power; a power of thirty degrees for greenhouses and of forty-five degrees for hothouses will I believe be found ample under any circumstances in

England; the only possible exception is in the case of forcing houses for very early grapes, and it is very doubtful whether even here any good would be attained by greater power. I am aware that it is urged that it is always easy to work an apparatus below its power, and that such an arrangement is economical of fuel, and within certain limits this is undoubtedly true; but if the quantity of pipe materially exceeds what is necessary, the only means of keeping the house at a moderate temperature is by leaving the furnace door open, and a very great waste, instead of any economy of fuel, necessarily results. The simplest remedy for this defect is to encase some portion of the pipes either with sand or sawdust, which prevents the heat from escaping into the house by diminishing the radiating surface.

The next point which requires notice is the expediency of heating several houses from the same boiler; now to this arrangement there is not the slightest objection, provided the same number or extent of houses are always to be heated at the same time, that is to say, several hothouses all which require permanent heat but different temperatures may be advantageously heated from one boiler. In like manner a range of greenhouses always requiring heat at the same time, to exclude part, may be worked from one boiler, though different degrees of heat are required in them, and even if one of these sometimes requires, as it probably would, a slight degree of heat when the others need none, this may be arranged without difficulty or inconvenience; but serious inconvenience will arise from any attempt to heat two buildings, in one of which occasional and in the other permanent heat is required, and this inconvenience will be great in proportion to the size of the buildings, especially, if as is generally the case, the hothouse is small and the greenhouses or pits more extensive. The same inconvenience will also be felt if two vineries, one to be forced at a later period than the other be heated from one boiler; the reason is briefly this, that the capacity of the furnace for fuel, the area of its bars or its consuming

power, and the boiler surface or absorbing power, are all calculated with reference to a certain quantity of pipe, by urging the fire to its utmost power, which is consistent with a proper duration of its heat, the pipes to which it is ordinarily attached are heated to their maximum, and the maximum heat is produced as required in the building. If at this time an additional extent of duty is laid on to the boiler, by opening the sluices which connect it with the pipes of a greenhouse or pits, the temperature of the ordinary service pipes is reduced, and the hothouse receives a diminished quantity of heat just when it requires most. On the other hand if the common boiler be constructed of a size and power adequate to the double service, when applied to the hothouse only, it will constantly overheat it, and this effect can be prevented only by throwing open the furnace door and allowing the fuel to burn to waste; for be it observed it is the area of the furnace bars which regulates the consumption of fuel. It is true that by means of dampers and skilful management some remedy may be found for these evils, but nevertheless they will exist to a greater or less extent, and the arrangement above mentioned should never willingly be adopted.

The different temperature of stoves, to be heated from the same boiler, may be regulated with the most philosophical accuracy, by allotting to each house, quantities of pipe bearing a different proportion to their respective surfaces of glass; the difference thus established will be maintained for all temperatures, unless accidental circumstances of exposure to wind, or imperfect glazing, should cause a variation, and the general heat of all may be regulated by attention to one fire.

Closely connected with the subject of heating is the providing an adequate degree of moisture in the atmosphere heated; indeed it is upon this above every thing else that the perfection or imperfection of an artificial climate consists, and it is by no means one of the least advantages of hot water pipes, that they do not, like brick flues, dry the atmosphere by absorbing its moisture. But this negative advan-

tage falls far short of what is necessary. The air of all buildings artificially heated, is dried by condensation upon the glass, and by the continued escape, through open laps or crevices, of saturated or moist air, whose place is supplied by cold and dry air. To imitate nature, it is therefore necessary to provide a constant supply of moisture, equal to the waste by these two causes; the means adopted to supply moisture to the atmosphere is by sprinkling the floor and the plants, and by troughs upon the heating pipes. Sprinkling the floor, is a very imperfect and inefficient expedient, the greater part of the moisture so bestowed sinks into the earth, and very little indeed finds its way to the atmosphere of the house, for the air in contact with the floor of a house, is generally nearly saturated, having lost its capacity for moisture by losing its heat, and it is only when it has reached the pipes, and been again heated, that it becomes capable of taking up moisture, and in this thirsty state it generally has to seek its moisture among the plants.

The most effectual mode of producing a moist atmosphere is by considerable surfaces of water above the level of the pipes, which surfaces ought always to exceed by a few degrees the mean temperature of the house. The troughs commonly employed are objectionable, only in as far as they are much too small, and becoming quickly empty, afford a very temporary supply. To be really efficient such troughs ought to be at least one foot in width by 5 or 6 inches in depth, and they should extend the whole length of the house, affording something like one square foot of water surface for every 15 square feet of glass in the roof. In Orchidaceous houses, and those destined to the cultivation of tropical plants, a still greater surface of water is desirable, and for this purpose slate cisterns, fixed immediately over the heating-pipes, as broad as the front shelves, and from one foot to 15 inches deep, may be advantageously employed. Their temperature will always exceed that of the house by a few degrees, and the great surface affords an abundant though gradual supply of moisture—they act also as partial reservoirs of heat, and afford the only efficient means of cultivating the beau-

tiful, but much neglected tribe of stove-aquatics. The culture of these plants has become almost extinct, solely, I believe, on account of an almost universal failure in managing them, and this failure has entirely resulted from the improper construction and position of the cisterns in which they are grown. In the few houses where cisterns are introduced, they are generally provided more for use than ornament, the position in which they are placed, and the materials of which they are constructed, forbid their being warmed, and in fact the temperature of the water contained in them is always some degrees below that of the house. Under these circumstances no tender aquatics will flourish: but if the cisterns be placed above the pipes, as here recommended, and formed of slate, their temperature will always by a few degrees exceed the mean temperature of the house, and if their situation be light enough stove-aquatics will flourish in them in great perfection.

It may be observed that this arrangement meets the necessity of the case with exceeding accuracy, for condensation is greatest, and consequently the atmosphere is most rapidly dried when external air is coldest, and a great artificial heat is maintained; and at this very time the increased heat of the pipes increases the evaporation from the cisterns. But to ensure this result the cisterns employed must be above the level of the heating pipes, and, if possible, directly over them.

The foregoing suggestions are intended to convey a few brief and practical hints to those who possess or may be about to erect hot water apparatus. For more minute details the work of Mr. C. Hood, above referred to, may be most advantageously consulted. Ample information will there be found on a subject, which is far more extensive, and which involves much more of scientific research and calculation, than is generally supposed, and to those who may take the trouble to consult it, it will be no longer a matter of surprise, that the earlier essays in heating by hot-water were frequently unsuccessful.

XLIII. *Report on the progress of the Horticultural Society of London, from May* 1, 1830, *to April* 30, 1840. *Prepared by Order of the Council.*

Read at the Anniversary Meeting, May 1, 1840.

TEN years having now elapsed since a material change was made in the management of the Horticultural Society, after the Report of the Committee appointed on the 2nd February, 1830, the Council think it incumbent on them to lay before the Fellows on the occasion of the present Anniversary, the following account of the progress of the Society, during the above period, in the promotion of the objects for which it was instituted.

It is well known, that at the period above alluded to, namely the commencement of the year 1830, the affairs of the Society had fallen into a state of irregularity and confusion. The large amount of debt, then first made public, and the check given to its credit, in themselves difficulties in the way of carrying on the ordinary business, were much increased by the loss of a considerable source of income, in consequence of the resignation of a large number of Fellows. The new Council, therefore, found it necessary in the first instance to restore the Society's credit to a healthy state. Every subject of expenditure not of the most urgent necessity was unsparingly cut off; several of the gentlemen who then composed the Council, came forward individually with the loan of large sums to pay the most urgent of the creditors; whilst others, with the late President at their head, subscribed most liberally. Thus, in the course of a couple of years, the whole of the simple contract creditors were paid off, and by the establishment of a system of the most rigid economy the Council, in a few years more, were enabled to turn

their whole attention to the important objects of the association; and they have now to congratulate the Fellows on a very large extension of the influence and utility of the Society, whilst a reduction of the debt from £20,293 to £12,904 has been effected.

The practical objects to which the resources of the Horticultural Society are applied may be classed under the following heads :—

I. The introduction of new, useful, or ornamental, plants.

II. The establishment and maintenance of a complete collection of authentic specimens of useful or ornamental trees, shrubs and plants.

III. The determination of the comparative merits of species or varieties either already in cultivation or newly introduced.

IV. The prosecution of experiments to ascertain the merits of any new processes or methods of cultivation connected with horticulture.

V. The publication of horticultural papers and reports, either the results of experiments and observations made by the Society, or communications received from Fellows and others.

VI. The distribution of new horticultural objects amongst the supporters of and contributors to the Society.

VII. The encouragement of horticulture, generally, by the award of medals and prizes for absolute, or comparative horticultural merit.

VIII. The instruction of young men in the art of gardening.

It is proposed to state successively, under each of these heads respectively, the labours of the Society during the ten years which have just elapsed.

I. The introduction of new, useful or ornamental plants.

This purpose is effected chiefly by the following means :

1st. By the employment of special collectors at the Society's expence.

2nd. By the direct importation of seeds or plants obtained from establishments abroad, or from foreign correspondents.

3rd. By donations from Fellows or others.

1st. Foreign Missions.

In the year 1830 the late Mr. David Douglas, who had already as collector of the Society enriched the country with so many valuable productions of N.W. America, was again absent on a similar mission to the same district, and, in the course of an expedition into Upper California from December 1830 till the summer of 1832, he made collections of trees, shrubs and ornamental plants of no less importance than those which he had formerly transmitted. From thence his instructions directed him to return to the N.W. Coast, and to further explore the rich western declivities of the Rocky Mountains, but on his arrival at the Sandwich Islands on his way back to the Columbia, he received intelligence that his friend, Mr. Sabine, had resigned the office of Secretary, in consequence of which he was induced by some misconception to resign his own appointment of Collector. And although he did subsequently proceed to the Columbia with the intention of transmitting seeds, &c. to the Society, which the Council would have liberally acknowledged,* yet owing to the unfortunate circumstances that attended his death two years afterwards in the Sandwich Islands, when on his return home, whatever he may have then collected has been lost, and the Californian seeds were the last re-

* The Council did in fact, consider it their duty to honour bills to a considerable amount, drawn by Mr. Douglas subsequently to his resignation.

ceived from him. All that is known of the last years of his life and of his untimely end has been published by Sir William Hooker, in the 2nd Vol. of the Companion to the Botanical Magazine. It will be here sufficient to give the following enumeration of the additions made to our Arboreta and Flower Gardens by means of his mission to California.

1. Trees and Shrubs raised from Mr. Douglas's Californian Seeds collected in 1831 and 1832, and now growing in the Arboretum of the Society, and more or less extensively distributed.

*Trees and Shrubs.**

Pinus nobilis
—— amabilis
—— grandis
—— monticola
—— Menziesii
—— insignis
Pinus Sabiniana
—— macrocarpa
Ribes glutinosum
—— malvaceum
—— Menziesii.

2. Ornamental herbaceous plants or annuals raised from the same collection, and more or less extensively distributed.

Calochortus splendens
———— venustus
———— luteus
Cyclobothra alba
———— pulchella
———— pusilla
Calliprora lutea
Triteleia laxa
Hesperoscordum lacteum
Lupinus tristis
——— rivularis
——— versicolor
——— sulphureus
——— albifrons
——— lucidus
Lupinus grandifolius
——— nanus
——— densiflorus
——— succulentus
——— hirsutissimus
——— leptophyllus
Gilia capitata alba
—— tricolor
—— tenuiflora
—— pharnaceoides
—— achilleifolia
Leptosiphon densiflorus
———— androsaceus
Eutoca divaricata
——— viscida

* Dendromecon rigidum was killed by the hard winter, 1837-8.

Lasthenia glabrata
——— californica
Godetia rubicunda
——— venosa
——— lepida
——— densiflora
Clarkia gauroides
——— elegans
Madia floribunda
——— elegans
Pentstemon staticifolium
——— crassifolium
——— brevifiorum
——— heterophyllum
Psoralea macrostachya
——— orbicularis
Mimulus roseus
——— cardinalis
Chryseis crocea
——— compacta
Heuchera cylindracea
——— micrantha
Pæonia Brownii
Potentilla glandulosa
Horkelia fusca
Hosackia stolonifera
Stenactis speciosa
Diplopappus incanus
Limnanthes Douglasii
Calandrinia speciosa
Phacelia tanacetifolia
Antirrhinum glandulosum
Bartonia aurea
Collinsia bicolor
Oxyura chrysanthemoides
Platystemon californicum
Trifolium fucatum
Clintonia pulchella
Nemophila aurita.

In the year 1836 the Council determined on sending a Collector to the elevated regions of Mexico, as the country most likely to produce the greatest number of objects of value to the Gardens of this country at the least risk and expense to the Society, and they selected for this purpose Mr. Theodor Hartweg, a steady, well-informed, and zealous young man, native of Germany, and then in the Society's service as Clerk at the garden.

In determining the route he was to take, the amount at which his current expenses were to be fixed, the nature of his outfit, and many other points connected with his mission, the Council derived essential assistance from the advice of several gentlemen well acquainted with Mexico; and they have more especially to express their acknowledgments for such services to R. P. Staples, G. F. Dickson and S. M'Gillivray, Esqrs. The

Society was also indebted to the Hon. W. F. Strangways, Under Secretary of State for Foreign Affairs, for letters to Her Majesty's residents in Mexico, and to R. Harrison, Esq. of Liverpool, and Messrs. Byrn, Brothers and Co., and C. Tayleur and Co., of the same place, for numerous letters of introduction.

Upon the application of the Council, the Lord's Commissioners of the Admiralty were also pleased to authorize the Commanders of Her Majesty's Mexican Packets to bring Mr. Hartweg's collections home, free of expense, whenever room could be found for them, without inconvenience to the passengers.

These and other preparations for rendering his mission as effective as possible having been completed, detailed instructions were drawn up and definitively settled in a Committee appointed for the purpose,* and a passage was secured for Mr. Hartweg on board the Montezuma. This vessel sailed from Liverpool on the 6th of October, 1836, and after a passage of 58 days Mr. Hart-

* The following extracts from these instructions will give the best idea of the principal objects the Council had in view.

"Your grand object will be to keep always as far as may be practicable to the high land, possessing yourself of the Mountain Flora. With regard to the spots which you may take as your centres of operation, you will be guided by the information you may procure in the country and by your own judgment, bearing this always in mind that the greatest object of your mission is to procure seeds, &c. of the plants that are likely to be capable of enduring the open air in England, and that this end will be the more completely attained the more you avoid what is called the Tierra caliente, and keep to the Tierra fria, or the upper limits of the Tierra templada. Nevertheless it is by no means wished that you should neglect opportunities of collecting plants of a less hardy kind, as for example Orchidaceæ, provided they come readily within your reach."

"You are to have the privilege of drying plants for sale, provided it does not interfere with the specific objects of your mission, the dried plants to be charged to every Subscriber at the rate of £2. for every 100 species, upon condition that one entire set is sent to the Society without charge, and that all the specimens pass through the office of the Secretary of the Society for the time being, who is to be apprized of the sums charged, to collect the money for you from your Subscribers, and to place it to your credit with the Society."

WEG landed at Vera Cruz on the 3d of December. His progress from that day to the present time will be best shewn by the following extracts from the letters received from him from time to time, with the addition of Notes explanatory of the nature and results of the collections despatched by him and mentioned in his letters.

No. 1.—*Zaquapam (near Vera Cruz), December* 15*th*, 1836.

—"Having delivered the various letters of introduction, I started " on horseback on the 6th for the *rancho* of Mr. LAVATER, in Mr. " DE WILDE's company (of the firm STALLFORTH and Co.), who " happened to go there at the same time, and reached it after two " days hard riding over a country with no regular roads, and through " *barrancas*. I was very kindly received by Mr. and Mrs. LAVATER, " who expected me some time ago; having been informed by their " friends in England of my intention of visiting them. During the " few days that I am here I have employed my time in collecting " Epiphytes, so that I am enabled to despatch to-day two boxes to " Vera Cruz, marked H. S. 1 and 2, addressed to the care of Messrs. " MUNOZ, MATFIELD and Co., who will ship them on board the " English packet, which leaves Vera Cruz in about four or five days. " Besides a few other seeds and roots, I send the long wished-for " Veratrum Sabadilla, which is rather scarce in this neighbourhood, " growing in greater abundance towards Orizaba. I also send seeds " of a pinnate-leaved Berberis, which will be a new acquisition to the " half-hardy shrubs."

These two boxes were received on the 27th of February, 1837, in excellent order, having been packed in Tillandsia usneoides, to which their good condition is probably to be ascribed.

The plants consisted of 65 species of Orchidaceæ, two kinds of Cacti; three bulbs, one species of Convolvulus; and there were seeds of five other plants. Out of these the following are now alive in the Garden:—

Catasetum maculatum
——— citrinum
Oncidium stramineum
Lælia anceps

Epidendrum seriatum
——— equitans
——— umbellatum
——— fuscatum
Liparis elata
Stelis ciliaris
Notylia punctata
Hartwegia purpurea
Brasavola glauca
Dinema polybulbon
Cyrtochilum maculatum several varieties
Isochilus lineare
Trichopilia tortilis
Maxillaria tenuifolia
——— variabilis var. unipunctata
——— aromatica
Acropera Loddigesii
Polystachya luteola
Convolvulus sp.
Crotalaria sp.
Ferraria sp.
Asagræa officinalis.
Berberis tenuifolia (a very fine new species)
Quercus xalapensis
Agave saponaria

Besides which, 18 other kinds of plants are alive, of which, as they have not yet flowered, the names cannot be determined with certainty.

No. 2.—*Silao, January* 17*th*, 1837.—"On the 27th of December "I left Zaquapam, after being most hospitably treated by Mr. and "Mrs. Lavater and their partner Mr. Sartorius, and travelled on "horseback to Xalapa, where I had leave to stay a few days for "collecting, but my intention was unfortunately frustrated by the "neighbourhood not being safe, robberies being almost a daily "occurrence. I therefore lost no time, and took a place in the "diligence for Mexico, where I arrived on the 2d instant. Having "delivered my letters of introduction and procured new ones, "wherein I was most kindly assisted by the British Consul, Mr. "O'Gorman, as well as by Messrs. Byrns and Hooton, Messrs. "Manning and Marshall, and Mr. Chabot, I started on the 9th "for Guanaxuato, which journey I performed partly in diligence "and partly on horseback, and arrived there on the 13th instant. "There I found, after a two day's ramble, scarcely anything in flower "(with the exception of a few Mammillariæ), and accepted, therefore, "the invitation of Mr. O'Gorman (the Consul's brother) to spend "a few days with him in Silao, which is for the present moment a

" more promising place than the Hills of Guanaxuato. P.S. Dr. " SCHIEDE died a few days previous to my arrival in Mexico of a " typhus fever.

No. 3. — *Guanaxuato, February* 17*th*, 1837. — " I left Mr. " O'GORMAN's place at Silao on the 22d of last month, and took up " my old quarters in the house of Messrs. MEADE, the corres- " pondents of Messrs. BYRNS, HOOTON and Co., who supply me " here with the money necessary for my undertaking. The expenses " this month have greatly surpassed the stipulated allowance it being " quite impossible for me to go out collecting without horses, and a " man to accompany me, without which I am exposed to being " stoned or lassoed, as has happened to several foreigners. The " climate makes travelling on horseback indispensable, and particu- " larly here at this season, where I must go some miles before I am " out of the region of the all-devouring goats and sheep; but yet " under all these circumstances I find sufficient to keep me occu- " pied, and I have already collected seeds, some of which I hope " will prove to be new."

No. 4.—*Guanaxuato, March* 17*th*, 1837.—" During the last " month I have made various excursions in the mountains of this " neighbourhood, and have been fortunate enough to find, besides " a few old acquaintances, and notwithstanding the unfavourable " season, such plants as Ribes, Arbutus, Berberis fascicularis, and " two new species of Garrya; one of the latter, a shrub from 15 to " 20 feet high, I met with a few leagues from here, and the other on " the Gigante, the highest point of this department, 9000 feet " aboae the sea, but neither of the flowers are so showy as those " of G. elliptica, and of one only have I as yet been able to gather " a few seeds."

No. 5.—*Leon, April* 18*th*, 1837.—" On the 13th instant I arrived " here from Guanaxuato, having been detained for a few days by " not finding a direct carrier to take my luggage. During the short " time I have been here I have found a few things which I

" had not before, but upon the whole this neighbourhood is not " so promising as I expected, the same barrenness prevailing " here before the rainy season as at Guanaxuato. The moun- " tains, which are at a distance of about ten miles, I have not yet " visited; but, having already gone over the greatest part of the " same ridge near Guanaxuato, I do not expect to find much " variety there."

No. 6.—*Leon, May* 18*th*, 1837.—" I am getting together a few " plants of an Orchidacea, the only species which I found in the " mountains here, growing on Oaks at least 8000 feet above the " sea, where it occasionally freezes, the flower is of a beautiful " pink, 6 inches in diameter.* Owing to the disturbed state of " this neighbourhood (the late *pronouncement* of San Louis Potozi, " and attack upon the money-carrier), I do not like to run the risk " of sending them off now, but I shall do so when it becomes a " little quiet, along with half of the seeds that I have collected, and " send the other half by a different opportunity."

No. 7.—*Lagos, June* 19*th*, 1837.—" Your letter of the 14th " March I received on the 31st of May last, and I am very happy " to learn that the Orchidaceæ collected at Zaquapam arrived " safely, and that many new ones have been recognized among " them. I only regret that my instructions did not permit me to " make a stay of some months in that country so rich in plants, " where I might have been enabled to collect the vegetable pro- " ductions from the beginning of the Tierra templada to the Snow " line even, visiting each climate in its proper season, without " absenting myself much from either. Here it is a real misery " to go about collecting; I sometimes am riding about for two days " together in a heat of from 88—90° Fahr. in the shade, without " often finding more than a single plant in flower. The Tierra fria, " which is a little more productive, is here only on the highest

* Lælia majalis, Lindl.

" summits of the mountains, and will probably furnish a little more " after the rainy season, which is now beginning, than at present. " During the five months that I am collecting now, I have only " dried about 125 species, 97 of which are complete sets of 20 " each. The country between Zacatecas and Durango, which I " am to visit is, I am told by several travellers, equally barren. I " intend therefore to make only one stay between those two towns, " probably at Sombrereto, and direct my steps towards the Sierra " Madre of Durango, which was recommended to me as being par- " ticularly rich.

" On the 13th instant I despatched to Messrs. MEADE of Gua- " naxuato, to be sent to Tampico and thence to London, a box " marked H. S. 3, containing the Orchidaceæ, mentioned in my " last letter, together with bulbs of a Yellow Amaryllis, and 39 " sorts of seeds, among which there is a larger quantity of the " Berberis from Zaquapam. Of the two new species of Garrya, " I sent all I could find. I arrived here on the 17th instant, " and shall proceed to Aguas Calientes in about three or four weeks."

The chief object of the mission having been to obtain hardy and half-hardy trees, shrubs, and plants, it was most desirable that much of Mr. HARTWEG's time should not be spent in the tropical climate of Vera Cruz, rich and varied as the vegetation of that neighbourhood was known to be; and although so keen a collector as Mr. HARTWEG must have felt great disappointment on finding himself in a country, comparatively speaking, so barren, yet the few things collected were alone of sufficient value to reward the labour of acquisition.

The box No. 3, mentioned in the last letter, was only received on the 3d January, 1838, nearly seven months after it had been packed up, and the contents had much suffered. Out of 40 sorts of seeds which it contained only 12 germinated, all of which are now in the garden. Among the more remarkable of these are Exogonium Purga, or the true Jalap plant, Lupinus Hartwegii,

Ipomœa longifolia, Heliotropium crassifolium, Verbena sp., Convolvulus sp., Parkinsonia aculeata, and Berberis tenuifolia. The others have not yet flowered.

Besides these, the box contained one Orchidaceous plant (Lælia majalis), and one bulbous plant (Habranthus concolor), both of which are now in the Garden. Its contents enabled the Society to distribute 50 plants and 350 packets of seeds among the Fellows of the Society.

No. 8.—*Aguas Calientes, July* 18*th*, 1837.—"I left Lagos on "the 13th instant, after finding but very little interesting there, with "the exception of a few plants of Milla biflora, and another in habit "resembling Calliprora, with most beautiful yellow flowers. I have "secured a good quantity of bulbs and shall transmit them to you "by the first opportunity. The neighbourhood of this town seems "to promise a little more than that of Lagos, particularly the "mountains, which now after the rains we have had, begin to pre-"sent some variety, but still I do not find my expectations realized, "and my collections of seeds as well as dried specimens are mak-"ing but a very slow progress, particularly the former to which I "only added six kinds during the last month."

No. 9.—*Aguas Calientes, August* 18*th*, 1837.—"During the last "month I have been more fortunate in my researches, than in "any previous, and have somewhat increased my collections of "seeds and specimens, among which the following distinguish "themselves for their beauty, viz. Pentstemon sp. Œnothera sp. "Castilleia sp. Sisyrinchium sp. and a Bartonia of which I sent "some seeds in box H. S. 3, under the name of 'Pegajosa' which "were collected at Guanaxuato, but having no flowers at the time "I was not able to recognise it."

No. 10.—*Aguas Calientes, September* 17*th*, 1837.—"My col-"lections received again the same addition during the last month "as during the one previous, for having extended my excursions "for some 20 leagues, I had a variation of soil and climate; the

" most interesting plants which I secured, either in roots or seeds,
" are two sp. of Cyclobothra, of one of which I have only seen the
" flower buds, but judging from its habit it promises to be very fine,
" it is also remarkable for bearing bulbs in the axils of the leaves; a
" species of Amaryllis, Milla biflora which I found in abundance
" and of which I secured about 1400 roots, seeds of an Arbutus
" with pink flowers, a most beautiful annual Cuphea, 2 species
" of Tradescantia, and a few other kinds less interesting."

No. 11.—*Bolaños, October* 18*th*, 1837.—" I left Aguas Calientes
" on the 22nd of last month, and arrived here on the 4th instant,
" travelling over a mountain path of which I never saw the
" like before, and which became daily worse by the continued
" heavy rains. A few days after my arrival here, I became ill
" of fever, probably in consequence of a sudden change from a
" cold to a hot climate, and after my recovery the servant was taken
" ill, but is fast recovering now by the aid of the little medicine chest.
" The principal object of my visit to this place was to procure seeds
" of pines and Orchidaceæ, which latter, from the elevation of Bo-
" laños above the sea, I anticipated to find in great abundance, there
" being only a difference of about 250 feet in the elevation between
" Mr. LAVATER's *hacienda* and this town; but my expectations are
" frustrated, the air being very dry and consequently unfavourable to
" that class of plants; however on the road from Aguas Calientes I
" was fortunate enough to find two terrestrial species, and on the
" mountains west of Bolaños, which are 5000 feet higher than the
" town, or about 8200 feet above the sea, I found two species of epi-
" phytes, all of which I secured, besides a very pretty Cactus resem-
" bling the Cereus senilis with its white spines, which at the ends
" are furnished with little hooks. During the three nights which I
" passed in those mountains, there was on one occasion a very severe
" frost, which will give you some idea of the hardiness of the plants.
" The same ridge of mountains is covered with Pines of which there
" are 4 species, but the seeds not being ripe yet, I was promised

" some in about two months by the Mining Company's forester, an " Italian gentleman residing up there, together with some seeds of " a white Rhododendron which was at the time of my visit in full " flower."

No. 12.—*Bolaños, November* 17*th*, 1837.—" Your letter of the " 19th of June last I only received on the 7th instant, and beg to " acquaint you that I shall forward the articles I have hitherto " been collecting for the Society as soon as I reach Zacatecas, " where part of the seeds are; the bulbs and terrestrial Orchidaceæ " not being in a state fit for transmitting at the time of collecting, " I always carried them with me, and planted them wherever I " made a stay of some time; the seeds forming only a small parcel " when I left Aguas Calientes I would not run the risk of sending " them down to the coast, as small packages are likely to be lost " on such a long journey. On my late excursions to the neighbour- " ing mountains I found, besides some seeds, two other species of " Epiphytes, but there is still another new kind which I have not " yet succeeded in finding, a flower of which I saw on the hat of a " Guichole Indian, and he not having fulfilled his promise of bring- " ing me some plants, I intend to visit these Indians myself, " although it is an enterprize of some danger from their being yet " in a primitive state of civilisation.

" According to your request I shall make up a collection of Cacti " as soon as I find some that are worth taking, hitherto having only " met with the commonest kinds. On the barren hills that surround " Zacatecas, and which are described to me as the field of Cacti, I " expect to find some interesting ones, nobody I believe having been " collecting there yet. A very remarkable one of the tall kind I " found here, bearing on one side only a very thick white wool, two " inches long, but I am afraid it will not stand a long voyage."

No. 13.—*Bolaños, December* 20*th*, 1837.—" On the excursion " to the Guichole Indians I found that species of Epiphyte I was " so anxious to obtain, with six other kinds, and seeds of two

" species of Vaccinium, two of Gualtheria, a Pyrola, one of the new " Garryas, a Juniperus, Littæa geminiflora, and a few kinds of " Cacti, among which there are some varieties of the small white " one, which I described to you in one of my former letters.

" On my return I was informed that Mr. FLORESI, for whom I " was furnished with letters of introduction, had arrived from " Zacatecas; he received me very kindly, and offered me every assis- " tance I should stand in need of; he only regretted that I was not " here during the rainy season, when I might have greatly increased " my collections."

No. 14.—*Zacatecas, January* 21*st*, 1838.—" I arrived here with " Mr. FLORESI on the 14th instant, and employed my time in " delivering the various letters of introduction with which I was " furnished in Mexico, and when the weather was favourable " in collecting a few Cacti, which I was told are abundant here, but " unfortunately they are the common kinds of Opuntia, and but " very few kinds of Echinocacti, which latter I expected to find " in abundance. As yet I have only met with four kinds, and they " are nothing new. The chief country for Echinocacti is in the " neighbourhood of Real del Monte, Zimapan, Valladolid, and " Tlalpuxahua, but in the direction that I am going they are said " to be rather scarce. The same may be said with regard to other " plants in going from here to Durango, which is nearly the same " country as from Guanaxuato to this place."

No. 15.—*Zacatecas, February* 20*th*, 1838.—" I beg to inform " you that I have this day directed to the care of Messrs. M'CAL- " MONT, LYALL and Co., Tampico, to be forwarded to you by the " next English packet, 5 boxes marked H. S. 4 to 8.

" In repacking the Cacti from Bolaños, I found the tall-bearded " kind in such a state as to preclude every hope of safe arrival in " England, and only the points of two were fit for transporting."

The several boxes mentioned in the above letter, reached Tampico in the beginning of the following month; but unfortunately

they could not be shipped previous to the French blockade, which was then about to commence. The commanders of Her Majesty's packets, as they successively touched at Tampico, declined taking them on board, alleging the large quantities of specie and cochineal they had to bring home, in addition to the extra number of passengers which they conveyed; and no other vessel whatever could leave the port during the whole period of the blockade. Notwithstanding, therefore, every exertion made by the officers of the Society at home and their agents abroad, as well as by Mr. HARTWEG himself, it was not till the month of January, 1839, that these five boxes were at length received on board Her Majesty's packet Penguin, together with three others mentioned below in the letters Nos. 17 and 19. They arrived at the Society's garden on the 27th February, 1839, more than twelve months after they had been packed, and, as might be expected, the greater number of the seeds, as well as the plants, were dead. The boxes contained (besides some sets of dried specimens) 13 species of Orchidaceous plants, 10 sp. of Cactaceæ, 13 kinds of bulbous plants, and seeds of 78 others; all, except the bulbs, in bad condition. The Orchidaceæ, with one exception, are now alive, but in a doubtful state; there are also living six Cactaceous plants, Allium striatum, Milla biflora, Zephyranthes sessilis, and 8 other bulbs which have not yet flowered. Of the seeds, only 11 sorts grew, the plants raised from which are now living in the Garden. Among them are Lupinus Hartwegii, Trifolium involucratum, and Lupinus leptocarpus; the others have not yet flowered.

About 2500 packets of these seeds were specially distributed among the Fellows of the Society.

No. 16.—*Santa Barbara, March* 18*th*, 1838.—"On the 26th of "last month I left Zacatecas, and proceeded, as I mentioned in my "last letter, to the neighbourhood of Tula and Santa Barbara, "where I find for the present more occupation than on the sterile "hills of Zacatecas. The road to San Luis, leading over an im-

" mense plain, offering no variety at the present season, is only " occupied by Opuntias, a few stunted Prosopis dulcis, Yuccas " and Berberis trifoliata, which latter, covering large tracts of land " approaching San Luis, are the only flowering plants on the whole " road. Near Tula the country assumes a more prosperous aspect, " the hills are again covered with trees, and gradually descending, " the traveller finds himself approaching the Tierra caliente. Here " it was my intention to spend a few weeks for the purpose of col- " lecting, and being at about the same elevation as Zaquapam, I " anticipated to find a similar luxuriance of vegetation, and a good " crop of Epiphytes; but the atmosphere here, being so much drier " than there, is consequently less favourable for them, and as yet I " have only met with eleven kinds, which being all new will prove " very acceptable to the Society. Here again I found a new species " of Berberis, resembling B. aquifolium, with whitish flowers, but " was not able to procure seeds of this or of the B. trifoliata."

No. 17.—*San Luis Potosi, April* 19*th*, 1838.—" On the 10th " instant I despatched from the Rancho de los Gallitos, to the care " of Messrs. M'Calmont, Lyall and Co., the results of my re- " searches from the neighbourhood of Santa Barbara and Valle del " Maiz, consisting of two Boxes: both containing Orchidaceæ, " and that numbered 10, containing in addition seven sorts of Cacti " and five sorts of seeds."

These boxes detained with the five previous ones, were received with them on the 27th February, 1839, in tolerably good order. They contained 16 species of Orchidaceæ, five kinds of Cacti, and seeds of five other plants. Three of the Orchidaceous plants and two Cacti are dead; the others are now living in the Garden, but, with the exception of Lælia furfuracea, have not yet flowered. Of the seeds, only one kind germinated, which is supposed to be an Ipomæa.

About 170 of the plants were specially distributed on their arrival.

No. 18.—*Bolaños, May* 18*th*, 1838.—" About three months ago

"I wrote to the company's forester here, reminding him of his " offer to collect some pine seeds for me, which at my departure " for Zacatecas were not then ripe, but he having neglected to " answer my letter, I had no alternative left but to look after them " myself, and now I am sorry to find they are all shed, nothing " but the empty cones remaining. I however have succeeded in " finding a few kinds of seeds, among which the white Rhododen- " dron is the most valuable. I had also an opportunity of seeing " in great perfection the Arbutus, of which I sent an ample supply " of seeds, marked 'with pink flowers' on the seed paper; it may " well be called a rival of Ribes sanguineum.

"Agreeably to the request contained in your letter of the 27th " October last, I endeavoured to procure the best information of " the country I am in, and most persons (Mr. FLORESI in particular) " that I asked on the subject, and who have a knowledge of the " greatest part of it, advised me to visit the state of Mechoacan " as the most promising to answer the object of my mission, the " mountains being well covered with pines and oaks, and the " plains rich and well watered. In a day or two I shall proceed to " Guadalajara, and return from thence to Zacatecas to prepare for " the journey to Mechoacan.

"The country from Tula del Tamaulipas as far as here, a dis- " tance of more than 160 leagues, which I have run over just now, " is one common plain destitute of trees, and at this season of all " vegetation; the same table land is said to extend northwards in " all directions, and I was therefore very happy to learn that I can " in some measure deviate from my instructions."

No. 19.—*Aguas Calientes, June* 17*th*, 1838.—"A few days ago " I returned to Zacatecas from the trip to Guadalajara, and pre- " pared immediately for the journey to Mechoacan, where I shall " arrive in about 10 days. On the road to Guadalajara I found " scarcely any thing to call my attention, the country being still " quite parched up, and not a green blade of grass is to be seen.

" This is the case with the whole of the table land, where the " vegetation lasts only for three months during the rainy season, " and, unless I can find out a place of constant verdure, my re- " searches will again prove as unsuccessful as during the last year.

" On the 14th instant I left with Mr. HENDERSON, Zacatecas, a " box marked H.S. 11, with the few things I have been able to col- " lect; it contains 10 kinds of seeds (and a few of Tropæolum pere- " grinum from a Garden), two kinds of Cacti from Zacatecas, two " bundles of duplicate specimens collected during the last year, and " a cake of clay containing the seeds of a species of Magnolia, of " which a similar quantity is placed in paper to see which would " arrive safest."

The box No. 11, arrived with the preceding seven. The Cacti are both now alive; of the 12 sorts of seeds, two only, Acacia filicina, and a Convolvulaceous plant, germinated. The Magnolia was dead in both instances.

No. 20.—*Morelia, (Valladolid) July* 22*nd*, 1838.—" I arrived " here about a month ago, and on the various excursions I made in " the neighbouring mountains I found some most valuable plants. " The Sierra here bears a great resemblance to that of Bolaños, " it is well covered with Pines and Oaks, which latter are adorned " with Orchidaceæ of which I have secured 18 species, the greatest " part of them new, four kinds of bulbs, a Cypripedium surpassing " C. macranthum, an Arbutus, the tall species of Garrya, Pinus " occidentalis, a species of Tilia and a most beautiful broad leaved " Fuchsia, but I found of the latter, only two ripe capsules.

" The herbarium consists the same as last year of 20 sets and of " 27 species at present, having before my arrival here not been able " to increase it much.

" I soon must leave this place, the country particularly to the S.W. " being exceedingly insecure, the *pronunciados* roving about in " bands of from twenty-five to three hundred men, robbing every " traveller of his arms, horse, and even the clothes on his back."

No. 21.—*Morelia, August* 21*st*, 1838.—"Yesterday I forwarded "the result of my researches in this neighbourhood to the care of "Messrs. Byrns & Co., of Mexico, to be sent to the care of Messrs. "R. Munoz & Co., Vera Cruz, consisting of four boxes, viz. H. S. "12 to 15."

"The term of my agreement to stay in this country will become "expired before I can receive an answer to this letter, I beg to be "informed of the determination of the Council, as to whether I am "to stay a third year in this country, or what I am to do, the aspect "of affairs here being at this moment very unpropitious to all "foreigners, as a war with France seems unavoidable. It has been "my intention to go south of the city of Mexico into the state of "Oajaca where many persons assured me that my exertions will be "better rewarded than in any other direction; if it is however the "wish of the Council that I should visit any other place beyond "the territory of Mexico, I most humbly submit to its decision, beg-"ging only to be provided with a map of the country which I am "to visit."

The boxes mentioned in the last letter arrived by different conveyances; No. 12 and 13 were received Jan. 17, 1839, in good condition, and contained 15 species of Orchidaceæ, 9 bulbous plants, and seeds of 16 others, out of which the following are now alive in the gardens, Arisæma macrospatha, Rigidella flammea, a very beautiful plant of similar habits to those of Tigridia, Bravoa geminiflora Fuchsia fulgens, (called by Mr. Hartweg F. Lindleyana), Garrya laurifolia, Calochortus barbatus, Milla biflora, Pinus oocarpa, Cratægus mexicana, Lælia furfuracea and Lælia autumnalis, besides 27 plants now living but which have not flowered. There were also in box 13, two clay balls containing roots of a species of Cypripedium, all of which were dead.

The box No. 14, arrived May 15, 1839, contained 11 species of Orchidaceæ, the whole of which are now living, and some roots of terrestrial Orchidaceæ, packed in balls of earth, but dead when re-

ceived. No. 15 reached the garden only on the 12th of July. It contained seven species of Orchidaceæ and two Cacti, all now alive.

Previous to the receipt of the last letter (which arrived in December, 1838,) the Council had, on consideration of the serious losses to the Society occasioned by the blockade, and of the alarming accounts which every mail brought over of the disturbed state of the Mexican provinces, determined on removing Mr. HARTWEG to some other country, which might be equally promising in valuable productions, without the personal danger to which he was exposed in Mexico. No place appeared from all accounts more favourable than the neighbouring state of Guatemala, and accordingly fresh instructions directing him to proceed thither were agreed upon, and despatched by the mail of the 15th of November. The following extract from this despatch will shew the nature of the information the Council were able to obtain on the subject, and the hopes they entertain as to the results.

"It is so difficult for us, at this distance, and in ignorance of the "state of the country, to give you precise directions as to the exact "course you should follow in proceeding into the state of Gua- "temala from Mexico, that we leave it to your own discretion "whether you proceed by Acapulco, or Vera Cruz, or by land. "We however enclose you a copy from the Guatemala Almanack "for 1837 of the posts between Mexico and Guatemala, both by "the Coast road and by that of Chiapa. In case you proceed by "land you had better get Messrs. BYRNS & Co. to appoint an agent "at Guatemala to whom your collections may from time to time be "forwarded for transmission to England.

"Arrived at Guatemala you will at once be in communication "with Belize, an English settlement, whose Governor has been "written to in your behalf by Mr. STRANGWAYS, from whence "English ships are continually sailing, and to which there is a steam "communication by way of the gulf of Dulce from Isabal,

"With Guatemala, as your centre of operations, you will have the "command of a very interesting vegetation from which we expect "the most valuable result. Near Guatemala is the Volcan de Agua "between 12000 and 13000 feet above the sea, and clothed with "verdure to the summit. The city of Guatemala itself is 5000 feet "above the sea, and, therefore, the climate will be very different "from that of similar latitudes so near the equator. The neigh- "bouring mountains in the west should be carefully explored, and "especially the side next the Pacific.

"In all your proceedings you will bear in mind that the objects of "the Society remain unaltered, and that the instructions already "given you as to the kind of plants and seeds to be collected are still "to be observed, viz.—that every thing beautiful or useful, not in the "gardens of England, is to be sent home, whether requiring the "stove, the greenhouse, or promising to be suited to the open air; "but that plants of the latter description, and consequently mountain "species, are to claim your chief care."

These instructions did not reach Mr. HARTWEG till the 24th January, 1839, and in the mean time he continued his monthly reports, from which the following are extracts.

No. 22.—*Anganguco, September* 17*th*, 1838.—"On the 24th ult. "I arrived here and found the country such as it had been described "to me, the mountains being all well covered with Pines amongst "which the Oyamel (Abies religiosa) is the most remarkable, but "the cones not being yet ripe, I resolved to return to this place to- "wards the close of this year to gather some, as well as other kinds "of seeds. The herbarium is rapidly increasing here, and amounts "now to about 1450 specimens."

No. 23.—*Real del Monte, October* 18*th*, 1838.—"I beg to in- "form you that on the 26th of last month I despatched a box "marked H. S. 16, to the care of Messrs. BYRNS & Co. Mexico, to "be forwarded through Messrs. R. MUNOZ & Co. Vera Cruz, con- "taining 17 sorts of seeds, seven kinds of bulbs and roots, and three

" species of Epiphytes. Among the seeds there is a large paper of " Berberis trifoliata collected in the neighbourhood of San Luis " Potosi by the administrator of the Hacienda del Espiritu Santo, to " whom I gave an order for it when passing through the latter place " in April last. Amongst the roots there is a new species of Dahlia " (D. repens *mihi*) growing in its wild state only one foot high, and " it could perhaps be employed with effect to produce dwarf varieties " if impregnated with the double kinds. The bulbs packed along " with the Orchidaceæ are those of a plant called 'Cebadilla' " growing on the 'Campanaria' about 9500 feet above the level of " the sea; it has a beautiful brown scented flower, and the leaves " bear a resemblance to Veratrum Sabadilla of which latter the " above name is probably a corruption. Cattle eating the leaves " die in consequence. The Orchidaceæ are Oncidium tigrinum, " and Bletia majalis (Schiede) the latter is the same kind as con- " tained in box, H.S. 3.

" On the 27th of last month I started from Anganguco for Real " del Monte, for which place I was furnished with a letter of intro- " duction to Charles Ehrenberg, Esq. who being an amateur " botanist is giving me every information respecting localities that I " am in need of. On the few excursions that I have made as yet I " found seeds of Cotoneaster denticulata, a splendid Chelone, a spe- " cies of Symphoria, Pinus patula (Schiede), and a few Mammillarias. " I also found a new species of Abies (not hirtella) resembling " Douglasii in cones; Mr. Ehrenberg has never found it during " his stay of five years here. There is also Pinus occidentalis and " two other species or varieties of it; one of them has remarkably " long leaves, larger cones, and the squamæ end in sharp points, " the other has glaucous leaves and smaller brownish cones. Of all " these I shall secure seeds when they are a little riper. From " Morelia I sent in box H. S. 12, some Pine seeds under the name " of P. occidentalis. I have now had an opportunity of seeing a " specimen of it in Mr. Ehrenberg's herbarium; it had been col-

" lected on the same spot as mine by the late Dr. SCHIEDE, who " gave it the name of P. oocarpa."

The box No. 16 mentioned in the above letter is missing, it does not appear ever to have reached Vera Cruz.

No. 24.—*Real del Monte, November 20th,* 1838.—" By the first " convoy that leaves the city of Mexico, I will endeavour to send " part of the seeds that are now in my possession; but I think it is " a bad speculation to send small parcels, they being very apt of " getting lost. Mr. EHRENBERG sent two little boxes of seeds last " year, one of them never reached its destination, and the other " only empty. I made some enquiries about the Radix mechoacana " purgans, and I find that it is not a Convolvulus; for HERNANDEZ, " who describes it in his 'Thesaurus,' says that it is a dicœcious " milky plant, from which I infer that it must either belong to Cu- " curbitaceæ or Apocynaceæ. I have written to Morelia about it, " but not received an answer. Being obliged to return soon to " Anganguco I intend to make a little trip through Tierra Caliente " to Morelia in quest of it, where I dare say I shall fall in with it.

" Since writing my last I have made various excursions to " Ismiquilpan, Actopan, Zacualtipan, Meztitlan; and never since I " am in the country have my exertions been better paid than during " the last month. I found the pretty little Pinus Llaveana, three " new species of Mahonia, a Garrya (the third species which I found " now, but only about a dozen half ripe seeds) two Vaccinia, one " Clethra, an Andromeda, a Viburnum, 2 Cornus, 1 splendid Capri- " folium, the true Convolvulus Jalapa, another trilobed Convol- " vulus which also yields the Jalap, both with purple flowers, a " large white Ipomæa, some acorns, Cereus senilis and many other " Cacti, with Parkinsonia aculeata, and a Valeriana with a very large " root, which crushed and mixed with *pulque,* is employed by the " natives against fever, but I am not aware with what result. About " ten days ago when returning from one of these excursions late at " night and about $1\frac{1}{2}$ league of this place, I was accosted by a per-

" son on horseback with " *quien vive*" to which I made no reply but " took out my pistols, and told the *mozo* to do the same; the fellow " in passing by scrutinized me, when about 20 yards behind us he " discharged his pistol, and the ball only passed a few inches over " our heads. This is the first time that I was fired at, and it is " quite a wonder that I was never attacked and robbed before."

No. 25.—*Real del Monte, December* 20*th*, 1838.—" I have not " yet been able to send you a parcel of seeds as requested, nor is " it likely to take place before some time, the hostilities between " the French having begun; the Castle of San Juan de Ulloa and " Vera Cruz are taken, and all the inhabitants have left the latter " port. Tampico also is in disorder. What has become of the " boxes at these ports I have not been able to learn, but to me it " seems as if every thing is conspiring that my collections, got to- " gether with great labour and expense, should never prosper. " During the last month I have made another long and interesting " excursion. I went again to the Cardonal, Zimapan, through " a long ravine (*barranca seca*) to Jacala, and returned by another " very interesting ravine to the smelting works of Encarnacion. " In the latter barranca I not only found a tolerable quantity of " seeds of the new species of Garrya (macrophylla *mihi*) but also " another new species. Pinus Llaveana is growing in great abun- " dance near Zimapan, but all my exertions for securing a good " quantity of seeds were only paid with a few cones; I therefore " bought some old seed which is an article of commerce, and " according to an experiment made I found that there is only a " loss of 20 per cent, a mere trifle."

" I find still so much to do here, that I cannot leave this place " before a month or two, and by that time I hope the difference " between France and this country will be settled. I am now form- " ing a collection of Cacti and have already visited the same place " where that extraordinary collection, which was exhibited at one " of the Society's exhibitions in 1837, by Mr. Deschamps, had been

" gottogether; Mr. DESCHAMPS is stated to have collected them in " the neighbourhood of Tlalpujahua, but this I must contradict, for " I spent several days at that place in search of Cacti, and did not " succeed in finding even a single plant.

" Another excursion I made to the Puente de Dios or Cueva de " Dantoe, which is often mentioned in Kunth, I found some very " pretty things, amongst others a new Spiræa, Lindleya mespiloides, " and an officinal plant called ' Yerba de San Pedro,' probably a " new species of Bouvardia."

No. 26.—*Real del Monte, January 20th,* 1839.—" During the " last month I again found some very interesting plants, as for " example a splendid Caprifolium, a species of Mahonia, a Daphne, a " fifth species of Garrya (but no flowers or seeds,) a Lonicera, " a Fuchsia; and then on an excursion to Tierra Caliente, some 25 " leagues from here, I collected about 24 species of Epiphytes, but " there are only 3 or 4 new ones among them, a few seeds of the " true Convolvulus Jalapa, a shrubby Lopezia, a yellow flowering " Cobæa, two varieties (? sp.) of Pinus occidentalis, and a few " Cacti."

No. 27.—*Mexico, February 22nd,* 1839.—" On the 24th ultimo " I received the new instructions of the 15th of November last, " they having been detained by some unaccountable error two " post days at Vera Cruz; the copy also I duly received from " Messrs. BYRNS and Co. on my arrival here on the 20th instant. " As yet I am unable to see Mr. ASHBURNHAM about my new " mission to Guatemala, owing to his time being occupied in " despatching the mail, but Mr. PARKINSON Her Majesty's Consul, " and Messrs. BYRNS are of opinion that I should proceed to Oajaca, " and wait there an opportunity of going by sea from Acapulco or " Tehuantepec, between which Oajaca is situated at equal distances " from either port. The country is now in a most deplorable state; " before leaving Real del Monte I had a very narrow escape of falling " into the hands of some fifty robbers, who entered and sacked the

" little town of Huasca near Anganguco. I was detained for three " days in the mountains, through the federalists having entered " that place with a view to overthrow the present Government. " According to the last accounts received from Guatemala that " country seems to be in an equally deplorable state; the Blacks " are said to be at war with the Whites, but it is expected that by " the time I arrive there, their differences will be settled.

" On the 2nd instant I left Real del Monte, after having des- " patched the same day the articles collected there to the care of " Messrs. BYRNS and Co., Mexico, with the usual directions for for- " warding them; all the boxes with the exception of No. 23—26 " have left here for Vera Cruz a fortnight ago, and will probably be " shipped soon, there being some hope that the merchant vessels " off Vera Cruz will be allowed to unload.

" Enclosed I send a detailed list of despatch H. S. 17-26. Of " Pines I send a great variety; of the five first I must leave it unde- " cided whether they are varieties of each other, or whether their " characters are strong enough to elevate them to the rank of " species; I sent therefore in every bag some branches to enable you " to recognize them. No. 6, Pinus Teocote *Schiede*, I must recom- " mend to another name, as the one attached to it is an erro- " neous one, for I never could find a person who called it 'Teocote' " but always 'de ocote' or 'Pino de ocote' (candle wood pine,) and " this is a very vague expression, all the pines without exception " yielding the ocote.

" I have made arrangements with Mr. EHRENBERG of Real del " Monte to send to the Society with some other seeds, which I " pointed out to him, some cones of the new Abies mentioned in a " former letter, as well as of the 'Ayacahuite' a new species of " Pine allied to P. Strobus and excelsa, with cones more than a foot " long, for which I promised him the articles contained in the en- " closed application."

The boxes 17 to 26 (amongst which 23 and 24 contained dried

plants) were all received July 12th, 1839, in excellent condition, which is probably to be attributed in a great measure to their having been packed in a species of moss. They contained, of Orchidaceæ 12 species; of Cactaceæ 50 species; 4 species of other plants; and 151 kinds of seeds. All the Orchidaceous plants, with one exception, are now alive. Of the Cactaceous plants, there are now living, 31 Mammillarias, 4 Cerei, 8 Echinocacti, and 2 Opuntiæ. These, not having flowered, have not yet been determined.

Of the 4 other plants, 3 are now in the Garden; these also have not flowered. Most of the seeds were apparently in good condition; up to this time, however, only 63 kinds have grown, among which are the following:

Pinus macrophylla
P. apulcensis
P. patula
P. Teocote
P. Hartwegii
P. Pseudo-strobus
P. Russelliana
P. Montezumæ
P. Llaveana
P. Devoniana
P. leiophylla
Abies religiosa
Cupressus thurifera
Juniperus tetragona
J. flaccida
Rhamnus umbellatus
Lindleya mespiloides
Fuchsia fulgens
Arctostaphylos pungens
Betula jorullensis
Convolvulus stans
Cornus grandis
Celtis canescens
Dalea odorata
Veratrum graminifolium
Mahonia gracilis
M. trifoliata
M. pallida
Cobæa stipulacea
Cotoneaster denticulata.

Of these seeds about 4300 packets were distributed.

No. 28.—*Oaxaca, March 19th.* 1839.—"During my stay in the "City of Mexico I had occasion to see several persons with regard "to my intended journey to Guatemala, all of whom concurred in "the opinion that it is imprudent to proceed thither at the present "moment; but Mr. WHITEHEAD, whose brother is in partner-"ship with Mr. SKINNER of Guatemala, had lately received news of

" a more satisfactory kind; the ringleaders of the rebellion are said " to have accepted of some lucrative situations under Government " and promised to be quiet for the future. With regard to my pro- " ceeding to Guatemala people also differ widely in opinion, some " recommend me to embark at Acapulco for Guayaquil and back to " Irtapa, others by way of Havannah to Belize and thence to Gua- " temala and some as the least round about and least expensive to " go by Chiapas, which in fact is my favourite plan. In a few days " the post passes through here for Guatemala, when I shall write to " Mr. SKINNER and ask his opinion on the subject, as well as the " present state of that country; in the mean time I shall have ample " occupation here.

" I have presented myself to Mr. ASHBURNHAM, but it was " not in his power to serve me with any thing, he having no corres- " pondents in Guatemala, nor are there any English residents on " the road beyond this town; but the Prussian Minister M. V. " GEROLT, at Mr. PARKINSON's request, furnished me with a dozen " letters of introduction to very respectable persons in various parts " of Guatemala.

" On the 2d instant I left Mexico in company with Mr. SMITH, " who brought a convoy, and I arrived here safely yesterday. I have " addressed letters to several persons, requesting them to make fresh " collections of handsome plants, but I think it will have very little " effect, they having but little inclination for scientific pursuits " during their hours of leisure."

No. 29.—*Hacienda del Carmen in the Sierra of Oaxaca, April* 17*th*, 1839.—" During the last month I have made an excursion to " the Sierra in search of Orchidaceæ, and upon my return to Oaxaca, " a fortnight ago, the *mozo* was taken so ill with severe rheumatism " and swelling at the joints that I sent him to the hospital, where " he is now recovering, and I too, after a trip to Mitla, returned ill, " suffering from headache, attended with a little fever, but cured " myself, and got well again in about four days.

"Tierra fria offers but little at the present moment, I have there-
" fore resolved to leave this to-morrow for the Rincon and Chinantla,
" about 60 leagues from Oaxaca on the east coast, in search of
" Orchidaceæ and medicinal plants. Of Epiphytes I expect to find
" many new ones, as Mr. PARKER's collector did not penetrate so
" far, he only having collected those about the mining district, some
" of which I found in the Mountains of Irapeo near Morelia."

No. 30.—*Hacienda del Carmen, May* 18*th*, 1839.—"Your letter
" of the 14th of February last reached me here on my return on the
" 15th instant from a long and interesting excursion which I made
" across the whole Cordillera, and even to the low lands in the state
" of Vera Cruz, a distance of one hundred leagues from Oaxaca.
" My exertions, as may be supposed, have been well paid in that
" splendid country of constant verdure. How different from the
" arid plains and mountains in the North! Among the seeds I
" collected, there are three species of Gaultheria, two of Vibur-
" num, and a most splendid new Fuchsia. Among the Orchidaceæ,
" which were the chief object of this excursion, I think I
" found again the Arpophyllum spicatum, sent from Morelia
" and of which some more are expected; it bears a dark purple
" flower. The Epiphytes, which amount to more than 60 species,
" are partly packed up, and will be despatched as soon as some
" others, which I have left on the road, have arrived. From
" Mr. SKINNER, of Guatemala, I have not yet received an answer,
" I intend, therefore, to make a similar excursion to the South
" coast until it arrives, or till I receive my luggage from Mexico,
" which is detained in Puebla for want of conveyance. The *mozo*
" I left in the Hospital in Oaxaca made his escape after having
" partly recovered, in consequence of his having been nearly
" starved there; he is now engaged by another person to return
" to Zacatecas, which saved me a certain sum of dollars for sending
" him back, which, according to the laws of the country, I should
" have been obliged to do."

No. 31.—*Oaxaca, June* 17*th*, 1839.—"On the 27th ultimo I "again started on an excursion to the south coast, after leaving "with Messrs. R. Smith and Co. the results of my researches "from the north coast; they consist of six boxes H. S. 27 to 32, "and contain 83 species of plants, viz., 81 of Epiphytes and two "of Cerei. They left this for Vera Cruz on the 3d instant, so that "you may look out for their arrival very soon. My last trip to "the south coast has been as successful as the one to the north "coast; I found about 60 species of Orchidaceæ, making together "140 collected already in this neighbourhood. They will occupy "other six boxes, and start for Vera Cruz probably at the end "of this week. I defer giving the list of the stations until my "researches in this neighbourhood are closed. The next excursion "I undertake will be to the Chinantla, and after that I shall go on a "bulb excursion, of which I am told there is a great variety, so "that I may still be detained here about two months. You may "easily imagine that I find it difficult to separate myself from this "beautiful country; but I have a hope held out to me by Mr. "Skinner, of whom I heard lately, that other glorious fields await "me in Guatemala, and I also believe that it will be indifferent to "the Society to receive good things, whether they be from Mexico "or Guatemala. The collection of seeds is making but a slow pro- "gress, the best time is towards the end of the rainy season, which "has set in now; the same may be said of the herbarium. To my "no small surprise I see in your letter of the 15th of March last, "that the collections from Tampico have arrived in better order "than was expected; I was in great fear that the Tillandsia "should be completely rotten, and I only used it for want of "other packing material. It will be important for me to know "which of the various packing materials preserved the plants best, "taking also the time they were packed up into consideration, to "guide me in future packings, also if any of Cypripedium in the "clayballs have been saved."

The boxes Nos. 27 to 32, arrived on September 28th, 1839, in a very bad state, many of the plants being dead, and most of the living ones sickly, a circumstance owing probably to the unfavourable season of the year at which they were unavoidably despatched. Their contents were principally Orchidaceæ, of which, out of 90 species received, there are now no more than 53 alive, and most of these are still unhealthy. The only other plants in those boxes were two Cacti, one a Cereus, the other, an Epiphyllum, both of which are living.

No. 32.—*Hacienda del Carmen, July 20th,* 1839.—"I beg to "inform you that the plants collected on the excursion to the "south coast have left Oaxaca for Vera Cruz on the 24th of last "month, where they must have arrived long before this; they "were packed up in five boxes marked H. S. 33 to 37. In No. 36 "and 37 there are four plants of a Testudinaria, which resembles "very much T. elephantipes from the Cape, only that the trunk "is much flatter. I hope they arrived in good condition. I "should have sent more of it, but for the difficulty of getting "them to Oaxaca.

"On the 26th ultimo I again left Oaxaca for the excursion to the "Chinantla, from whence I only returned yesterday, not having "been as successful as I expected, considering also the pains I have "taken to go 40 leagues over old ground before I could only "enter the Chinantla. The few things I found are certainly "prime, and will with some duplicates of a former mission, occupy "about four boxes. I intend packing up these plants partly in "moss and partly in the Tillandsia or "pastle," both which are "easily to be procured here, in order to make a fair trial which "will preserve the plants best. The pastle is common almost all "over the country, from the coast up to about 9000 feet above the "sea; I am therefore very anxious to hear of the result, as the com-"mon moss is always difficult to procure."

The above mentioned boxes were received November 30th, 1839,

and were also in bad condition. The whole number of plants they contained was 71 Orchidaceæ, three Mammillariæ, three sorts of bulbs, and the species of Testudinaria mentioned in the letter. Of these, the Mammillarias are now living; so likewise are two of the three bulbous plants (an Oxalis, and Bessera elegans), and the Testudinaria. Forty-two species of the Orchidaceous plants are alive, but not in good health.

About 300 of the Orchidaceous plants received in these boxes have been distributed.

No. 33.—*Tehuantepeque, August* 23*d*, 1839.—"Enclosed I send "you the list of the articles, with their stations, collected during "my sojourn in the state of Oaxaca. The six last boxes H. S. "38—43, left for Vera Cruz on the 12th instant, where they will "arrive by the end of this month.

"On the 13th instant I left Oaxaca for Guatemala, and arrived "here yesterday. The journey from hence will occupy from 30 to "36 days; I could perform it easily in half that time, were it not for "the difficulty of sending my luggage thither, which obliged me to "buy another mule, and to travel only 6 to 8 leagues daily, which in "fact is quite enough, considering the bad state of the roads and "mountain passes towards Chiapa. I also found it necessary to "add to my travelling establishment another horse, one having "become completely exhausted by the long and continued excur-"sions in the state of Oaxaca; but unfortunately that new horse, on "arriving near the Hacienda, where he had been bred, took to the "bush. The Administrador, however, to whom the horse is well "known, promised me to do all in his power to restore him to me, "and sent two herdsmen in search of him; of the result of their "exertions I shall be informed to-morrow."

The six boxes arrived on the 21st December last; out of 46 species of Orchidaceæ they contained, 30 are now living; out of five bulbous and tuberous plants, three are living; besides these there

were a species of Echeveria, a species of Cycas, and another of Zamia, all now alive.

Of seeds there were 49 kinds, which, having been recently sown, have not yet germinated.

No. 34.—*Quezaltenango, November 9th,* 1839.—"I beg to "inform you that I arrived here on the 26th of last month, "having been a longer time on the road than I calculated at first, "owing to the rains having set in later than usual, and keeping on "till the beginning of this month, a circumstance not known for "many years. Upon the whole the journey has been rather unfor- "tunate; the runaway horse, mentioned in my last letter, I never "recovered, but received another for it from the Administrador of the "Hacienda, and the other exhausted horse, which had served me on "all my excursions since I left Guanajuato, had an inflammation in the "eyes, and fell down the barrancas several times in ascending the "'Gineta,' until I left him to his own fate. At the Hacienda de "Juncana, six leagues from Comitan, the *mozo,* who accompanied me "from Oaxaca, was taken ill of fever, and unable to proceed; I "then paid him off, and gave him, according to contract, a horse to "return on, and money for the road. There I lost several days in "getting another servant, and when I finally left, I was overtaken by "four bandit-like soldiers, who were sent after me to examine my "luggage, which they did in a most brutal manner, tearing up every "thing, and, notwithstanding the passports for luggage, money, and "arms, all of which had been signed in passing through Comitan, I "was taken prisoner with money and arms to that place, where at the "Custom-house I had every thing restored to me immediately; then "I complained to the commander of the place of the ill-treatment I "received, and of not respecting my passport; and told him plainly "that if he could not render me justice I must seek it somewhere "else. He then confronted me with the offenders, and the officer "who sent them after me, and ultimately I had the satisfaction of "having them sent to prison.

"On the rest of the journey I had no other incident, but then the "weather was very unfavourable, raining every day, and in Jacalte-"nango I was detained eight days by the incessant rains and sub-"sequent bad state of the roads.

"Immediately upon my arrival here I wrote to Messrs. P. and T. "Aycinena, apprizing them of my intention of staying here some "time, and received an answer by yesterday's post, enclosing several "letters of introduction. They have not yet received any letters for "me. The neighbourhood of this town is fully adapted to fulfil the "object of my mission, being very high and exceedingly cold; about "two leagues from this there is an active volcano, which I ascended "and examined in every direction, finding there a most splendid "Fuchsia, in flower and seed, resembling F. fulgens in beauty. "The Ayacahuite pine, of which I sent some cones from Real del "Monte, is very common here, and I shall send a quantity of cones "as soon as they are fit to be cut."

No. 35.—*Quezaltenango, November* 25, 1839.—"Since writing "my last I have made several excursions to Tierra templada, which "is here at a distance of three leagues, and two leagues farther "down I am in complete T. caliente, and twenty leagues only from "the sea shore, but the changes of vegetation are so rapid that I "am scarcely able to point out the characters of each climate."

No. 36.—*Quezaltenango, December* 23, 1839.—"Your letter of "the 30th of August last I received here yesterday, and your "instructions* contained therein respecting the kinds of plants to "be collected shall be strictly attended to.

"Since my arrival here I have made excursions in all directions, but

* These instructions were as follows:—

"Pray bear constantly in mind, that the great object of the Society is hardy and half-hardy plants, and that your efforts must be most particularly addressed to the collections of such species. We are glad to receive Epiphytes, Cacti, or other things if they come in your way, or even if they are procured without too great a loss of time; but the mountain plants, Pines, Shrubs and Herbaceous plants, are what we chiefly want."

" found that the cold region is productive of very few plants, being " for the greater part barren pine and oak tracts, with scarcely any " shrubs. The plains when not subject to cultivation are occupied " by a long grass, growing in large tufts, which gives not the slightest " chance to other plants.

" In a few days I shall pack up for immediate transmission to " England the few things I have collected here, and then proceed " to the city of Guatemala.

" A kind of Acorn of an extraordinary size I have collected, which " shall be packed up in fine sand and put in the midst of some box " of Epiphytes agreeably to your instructions.

" The political state of the country is far from being settled, some " of the states are still at war against each other."

No. 37.—*Guatemala, January 22nd,* 1840.—" I beg to inform " you that on the 20th instant the results of my researches from " the neighbourhood of Quezaltenango have left this for Belize, they " are packed up in six boxes, and enclosed I send you a list of their " contents and of the stations of the plants.

" I arrived here a few days ago and have as yet made only one " excursion, but at a glance the country seems to be more promising " than the burnt up fields near Quezaltenango."

Four of these six boxes arrived on the 25th of April. Three contained 38 species of Orchidaceous plants, for the most part in good condition; the other was filled with dried specimens and 23 kinds of seeds.*

The Council cannot close this portion of their report without

* Since this report was read the two remaining boxes arrived, and were in better order than those previously received; they contained 15 species of Orchidaceæ, which were all, except one Maxillaria, in a healthy state. Besides the seeds there were two small cases filled with acorns of different sorts packed in sand, the whole of which were dead.

About 420 of these plants, and 520 packets of seeds, have since been distributed among the Fellows of the Society.

stating that accounts received from various quarters bear full testimony to the zeal and devotion of Mr. Hartweg to his duties as a collector, and to the interests of the Society generally; and although his exertions during nearly a whole year were in a great degree rendered useless by the unfortunate circumstances connected with the blockade above alluded to, yet they cannot but consider that the coniferous seeds alone, which have been so abundantly raised and extensively distributed, have amply compensated for the expense of the mission, independently of the great variety of Epiphytes and Cactaceæ, and a considerable number of miscellaneous ornamental Greenhouse, as well as hardy and half hardy plants, that have been introduced to the country by this means.

2. Foreign Correspondence.

In the long list of Foreign, and Foreign Corresponding Members of the Society there will be found, it is believed, nearly every name of distinction in Horticulture in every part of the Globe; and of late years especially, since our extended communications with the Continent have afforded better means of ascertaining the real scientific qualifications of persons resident in the less frequented parts, great pains have been taken in the selection of those on whom the title is conferred. It is therefore hoped, that amongst the gentlemen added to the list since 1830, there is not one who is not known as a zealous promoter of Horticulture in some of its branches.

The following are the Foreign Members elected during this period; the number of twenty, as limited by the bye-laws, being now complete:—

July 6, - 1830. Dr. Wallich, Calcutta.
March 19, - 1833. Professor G. C. Nees v. Esenbeck, Breslau.
January 16, 1838. Baron Charles von Hügel, Vienna.
June 5, - 1838. James Traill, Esq., Cairo.

June 5,	- 1838.	His H. the Prince of Salm Dyck.
April 16,	- 1839.	Dr. Schouw, Copenhagen.
April 7,	- 1840.	Dr. Siebold, Leyden.
April 7,	- 1840.	Dr. Endlicher, Vienna.
April 7,	- 1840.	M. Dutrochet.
April 7,	- 1840.	M. Vilmorin, Paris.

Twenty-six foreign Corresponding Members have been elected during the same period, carrying the total present number to 217.

Amongst so many gentlemen, it is not to be expected that the whole should be in a situation to contribute materially to increase the Society's collections, which had already in 1830 become so considerable; but the Council feel it their duty on this occasion to repeat their thanks to their Foreign Correspondents generally, for the liberality they have evinced upon all occasions when the Society has had occasion to apply for plants, for seeds, or for information. Although it would not be within the limits of this Report to enumerate the whole of the articles received from them during the last ten years,—it seems desirable to mention the following, as the principal plants new to the country, imported through their means since the 1st of May, 1830, and now existing in the Society's collections, and more or less extensively distributed.

Class 1.—Hardy Trees and Shrubs.

From Dr. Fischer, St. Petersburg, F.M.H.S.

1834. Acer hyrcanum
Carpinus Carpinizza
Spartium acutifolium
Cotoneaster uniflora
Amygdalus pedunculata

1836. Gebleria suffruticosa
Fraxinus oxyphylla

1837. Juniperus taurica
Cistus tauricus
Eleagnus songarica
——— flava
——— sativa

1838. Ribes Dikuscha
Acer tauricum
Rhamnus Pallasii
Cratægus fusca.

From Dr. LEDEBOUR, Dorpat, F.C.M.H.S.

1833. Acer ibericum
1834. Lonicera Pallasii
Pinus orientalis
1835. —— altaica
Ribes aciculare
—— heterotrichum
1837. Alnus subcordata
—— barbata

From the late Baron JACQUIN, Vienna, F.M.H.S.

1833. Pyrus Schottii
Amorpha Lewisii
Syringa Josikæa
Berberis vulgaris dulcis
1837. Prunus effusa
—— Maraschа
Ribes opulifolium
Acer obtusifolium
Ephedra minor
Carpinus Carpinizza
Amorpha elata
Lonicera tatarica baccis flavis
Sambucus racemosa laciniata.

From Mr. OTTO, Berlin, F.C.M.H.S.

1833. Pinus Llaveana.

From Mr. C. A. FISCHER, Göttingen, F.C.M.H.S.

1835. Clematis parviflora
Ceanothus intermedius
Berberis mitis
—— lucida
Berberis spatulata
Cratægus succulenta
Spiræa inflexa
—— oblongifolia
—— obovata
—— cana
—— carpinifolia
—— decumbens.

From the ADMINISTRATORS of the Jardin du Roi, Paris.

1838. Solanum pubigerum.

From Professor A. DE CANDOLLE, Geneva.

1837. Pinus Pinsapo.

From Dr. BIASOLETTO, Trieste, F.C.M.H.S.

1835. Cytisus Weldeni.

From Dr. FALCONER, Saharunpore, F.C.M.H.S.

1837. Leptodermis lanceolata,
Spiræa laxiflora,

From Mr. BUCKATZSCH, Guben, F.C.M.H.S.

1833. Hardy Olive of Nikita.

From Messrs. BOOTH, Hamburgh, F.C.M.H.S.

1833. Æsculus Hippocastanum incisum
—— nigrum

Æsculus Hippocastanum præcox
——————— tortuosum
Berberis glauca
Pinus Fischeri
——— compressa
Populus Lindleyana
1835. Prunus Cocomilia
Acer Lobelii
1838. Lonicera Ledebourii
Acer Pavia
Quercus falkenbergensis
Ribes caucasicum
——— monstrosum
——— recurvatum
Berberis caroliniana
Lycium rigidum.

From Mons. AUDIBERT, Tarascon, F.C.M.H.S.

1835. Cupressus Tourneforti
——— expansa
Amorpha glabra
Ligustrum japonicum
1837. Celtis aspera
Amorpha florida
Diospyrus digyna.

From Messrs. BAUMANN, Bollwiller, F.C.M.H.S.

1838. Ceanothus pallida.

From Mons. VERLEUWEN, Ghent.

1834. Magnolia Norberti
Pæonia arborea rosa-gallica
Euonymus japonica variegata.

Class 2.—Hardy Ornamental Herbaceous Plants and Annuals.

From Dr. FISCHER, St. Petersburgh, F.M.H.S.

1834. Teucrium canum
Statice subulata
Polygonum tinctorium
Cineraria Fischeri
Delphinium divaricatum
Madia stellata
Platystigma lineare
Collinsia sparsiflora
Eucharidium concinnum.
Callichroa platyglossa
Bæria chrysostoma
Allium Ledebourianum
Pæonia tenuifolia flore pleno
——————— roseo
1835. Crucianella stylosa
1836. Nemophila atomaria
Platystemon leiocarpum
Plectritis brachystemon
Eutoca Wrangeliana
Amsinkia spectabilis
——————— intermedia
1838. Clematis lasiantha
Pyrethrum myriophyllum

From Professor WEINMANN, Pawlowsk, F.C.M.H.S.

1838. Erysimum Perofskianum.

From Dr. LEDEBOUR, Dorpat, F.C.M.H.S.

1833. Delphinium triste

Corydalis Gebleri
Lathyrus longipedunculatus
1834. Salvia canescens
Delphinium glabellum
Geranium albiflorum
——— affine
Herniaria Besseri.

From the late Baron JACQUIN, Vienna, F.M.H.S.

1833. Linaria dalmatica
1837. Nemophila phacelioides.

From Mr. OTTO, Berlin, F.C.M.H.S.

1833. Potentilla Thomasii
Plumbago micrantha
1835. Calandrinia discolor
Nolana atriplicifolia
Papaver persicum
1837. Glaucium rubrum
Potentilla pulcherrima
Nemesia floribunda
1838. Nemophila parviflora.

From the late Dr. SCHRADER, Gottingen, F.C.M.H.S.

1833. Orobus atropurpureus.

From Mr. C. A. FISCHER, Gottingen, F.C.M.H.S.

1835. Clematis lathyrifolia.

From the ADMINISTRATORS of the Jardin des plantes.

1832. Mimulus variegatus
1838. Solanum atrosanguineum
Gaillardia rustica
Cleitria hirta
Echioides grandiflora
Chlamydophora tridentata

From Professor A. DE CANDOLLE, Geneva.

1831. Helianthus orgyalis.

From Dr. BIASOLETTO, Trieste, F.C.M.H.S.

1835. Adenophora pereskiæfolia
Lindenbergia urticæfolia.

From Dr. FALCONER, Saharunpore, F.C.M.H.S.

1837. Polygonum amplexicaule
Cynoglossum furcatum
Ampelygonum chinense
Carpesium pubescens
Phytolacca acinosa
Nepeta spicata
——— spicata latifolia
Rheum Webbianum
Verbena sororia
Melissa umbrosa.

From the Prince of SALM DYCK, F.M.H.S.

1832. Pæonia suberecta
——— officinalis anemoneflora
——— microcarpa
Pæonia multifida
——— pubens latifolia.

From Mons. VERLEUWEN, Ghent.

1834. Gladiolus psittacinus.

From Professor MAURI, Rome, F.C.M.H.S.

1831. Orchis romana

Orchis pseudo-fimbriata

Platanthera bifolia florentina

Serapias oxyglottis.

Class 3.—Tender Trees and Shrubs.

From Mr. OTTO, Berlin, F.C.M.H.S.

1831. Passiflora kermesina

1833. Rhodochiton volubile

Dykia rariflora.

From Dr. WALLICH, Calcutta, F.M.H.S.

1839. Jasminum caudatum.

From Baron HÜGEL, Vienna, F.M.H.S.

1838. Pimelea prostrata

Lissanthe verticillata.

Class 4.—Tender Ornamental Herbaceous Plants and Annuals.

From the late Baron JACQUIN, Vienna, F.M.H.S.

1833. Zinnia elegans coccinea.

From Mr. OTTO, Berlin, F.C.M.H.S.

1831. Begonia heracleifolia

Begonia platanifolia.

From the ADMINISTRATORS of the Jardin des plantes.

1832. Ipomopsis picta.

From Professor A. DE CANDOLLE, Geneva.

Morina longifolia.

From Dr. WALLICH, Calcutta, F.M.H.S.

1833. Saccolabium papillosum

1839. Cœlogyne elata.

From Dr. FALCONER, Saharunpore, F.C.M.H.S.

1837. Coleus barbatus

Craniotome versicolor

Plectranthus striatus.

Class 5.—Collections of Fruit Trees received since 1830, from Foreign Countries.*

M. AUDIBERT, Tarascon, F.C.M.H.S.

Apples, Cherries, Figs.

Mr. J. ANTOINE, Vienna.

Pears, Currants.

* The names of the varieties are not given here, as the greater number remain to be proved.

JESSE BUEL, Esq., New York,
F.C.M.H.S.

Apples and Plums.

Messrs. BAUMANN, Bolwiller,
F.C.M.H.S.

Vines, Apricots, Cherries, Peaches,
Apples and Pears.

Mr. BURCHARDT, Landsberg,
F.C.M.H.S.

Vines, Apples, Pears, Plums, Peaches
and Nectarines.

Mr. CARR, Philadelphia.

Pears.

Mr. CORSE, Montreal.

Plums and Apples.

Mr. DEARBORN.

Apples, Pears, Plums, Cherries and
Peaches.

M. JAMIN, Paris.

Apples, Pears, Cherries, Plums and
Apricots.

Mr. KENRICK, Boston, Massachussets.

Peaches, Cherries, Apples and Pears.

Mr. LANGELIER, Jersey, F.C.M.H.S.

Pears.

M. LE CLERC, Laval.

Apples and Pears.

LE CH. PARMENTIER, Enghien,
F.C.M.H.S.

Pears.

Mr. PRINCE, New York, F.C.M.H.S.

Pears.

Mr. RAUCH, Vienna.

Apples and Pears.

Mr. B. SAUNDERS, Jersey.

Pears and Apples.

Dr. VAN MONS, Louvain, F.M.H.S.

Apples and Pears.

M. VILMORIN, Paris, F.M.H.S.

Vines, Pears and Strawberries.

M. DE WAEL, Antwerp.

Apples, Pears and Cherries.

3.—Donations from Fellows of the Society, Home Correspondents and others.

The Donations continually received under this head are exceed-

ingly numerous and valuable, but on this occasion the Council are again under the necessity of confining themselves to the enumeration of permanent additions made to the Society's collections since May 1830, omitting all those which, although previously wanting in the Society's garden, may have existed in the country.

Class 1.—Hardy Trees and Shrubs.

From Dr. Royle, on behalf of the Hon. E. I. Company.

1835. Leycesteria formosa
Pinus Pindrow
Ribes glaciale
Philadelphus triflorus
Spiræa cuneata
——— vacciniifolia
Berberis coriaria
Cratægus crenulata
Deeringia indica
Clematis grata
Grewia corylifolia
Pyrus stipulata
Rosa tetrapetala
Ribes Himalayanum
Juniperus squamosa
1839. Hydrangea altissima
Elæagnus parvifolia
Smilax maculata
Pinus Khesiya
Spiræa Lindleyana
Potentilla cuneata.

From Lord Auckland.

1838. Pinus Gerardiana
Daphne Aucklandii.

From Sir Henry Willock, Persia.

Double Yellow Persian Rose
Mishkijeh Rose.

From George Bentham, Esq.

1834. Fraxinus lentiscifolia pendula.

From the Rev. Mr. Berkeley, Madeira.

1834. Chamæmeles coriacea.

From Capt. Morse Cooper, Nipal.

1837. Coriaria nipalensis
Cotoneaster marginata.

From Lord Corehouse.

1837. Cytisus æolicus.

From Lord Hill.

1834. Quercus australis
——— Cookii.

From the Hon. J. T. Leslie Melville, E. Indies.

1831. Pinus Deodara. This seed produced the first plants raised in England.

From JOHN REEVES, Esq.

1832. Deutzia scabra
Acer palmatum
1836. Kerria japonica simplex
Prunus japonica simplex.

From the Hon. W. F. STRANGWAYS.

1837. Juniperus macrocarpa
Abies orientalis
1838. Pinus persica
Malva arborescens.

From G. H. WARD, Esq.

1836. Cupressus torulosa.

Class 2.—Hardy Ornamental Herbaceous Plants and Annuals.

From Dr. ROYLE, on behalf of the Hon. E. I. Company.

1835. Rubia Munjista
—— cordata
Thalictrum foliolosum
Cuscuta Himalayana
Leonurus pubescens
Astragalus stipulatus
Agrimonia nipalensis
1835. Stachys cordifolia
Pimpinella diversifolia
Iris fragrans
1839. Impatiens glandulifera
——— tricornis
——— longicornu
——— macrochila
Centaurea pulchra
Phlomis cashmeriana
Aplotaxis albescens
Lotus bracteatus
Sieversia elata
Epilobium ampliatum
Malva lucida
Cynoglossum canescens
——— glochidiatum
Epilobium streptocarpum
Papaver amœnum
Linaria elegans
Polygonum amplexicaule album
——— nipalense
Silene indica
Atriplex lucida
Origanum laxiflorum
Codonopsis lurida
Silene inflata nipalensis
Podolotus pilosus
Ranunculus muricatus
Salvia Moorcroftiana.

From GEORGE BENTHAM, Esq.

1834. Cyclamen Clusii.

From Mr. CHERNSIDE.

1835. Cypella plumbea
Pentstemon Mackayanus.

From Mr. HUGH CUMMING, Chili.

1831. Calandrinia arenaria
Lupinus elegans.

From G. F. Dickson, Esq., Mexico.

1836. Pharbitis diversifolia
Cosmus tenuifolius
Cypella plumbea
Echinais Dicksoni
Sedum miserum
Chelone barbata carnea.

Class 3.—Tender Trees and Shrubs.

From the Rt. Hon. Robert Gordon, Brazil

1831. Echites stellaris.

From Sir J. A. S. Mackenzie, Bart, Ceylon

1839. Hebradendron gambogioides.

From R. Mangles, Esq.

1837. Chorozema Dicksoni.

From Major Sir Thomas Mitchell, N. Holland.

1838. Stenochilus longifolius
——— incanus.

From Mr. Smart, N. Holland.

1837. Chorozema varium
Acacia cyanophylla
——— cuneata.

From the Hon. W. F. Strangways.

1837. Banisteria tenuis
Morrenia odorata
Mandevilla suaveolens.

From Mrs. Palliser.

1835. Campanula obliquifolia
Lupinus corsentinus.

From Sir Henry Willock, Persia.

1831. Nicotiana persica.

From Mr. J. Backhouse, N. Holland.

1837. Streblorhiza speciosa.

From G. Barker, Esq.

1837. Fuchsia cylindracea
Solanum candidum.

From George Bentham, Esq.

1832. Stapelia Gussoniana.

From Mr. Bunce, V. Diemen's Island.

1837. Eurybia glutinosa.

From G. F. Dickson, Esq., Mexico.

1836. Ipomæa tyrianthina
Stevia fascicularis
Eysenhardtia amorphoides.

From Mr. Drummond, Swan River.

1839. Thomasia glutinosa
——— foliosa
Mirbelia dilatata.

Class 4.—Tender Ornamental Herbaceous Plants and Annuals.

From Dr. Royle, on behalf of the Hon. E. I. Company.

1835. Amphicome arguta
Origanum normale.

From Mr. J. Backhouse, N. Holland.

1837. Helichrysum scorpioides
Panætia fulva.

From G. Barker, Esq.

1837. Lepechinia spicata
Cologania pulchella
Lupinus Barkeri.

From Mr. Bunce, V. Diemen's Island.

1837. Podolepis contorta
Senecio odorata.

From Mr. M'Culloch.

1839. Asteracantha longifolia.

From G. F. Dickson, Esq.

1836. Echinacea Dicksoni
Lobelia fenestralis
Agave saponaria
Dahlia repens.

From John Henry Lance, Esq.

1833. Brassia Lanceana
Oncidium Lanceanum
1837. ——— tetrapetalum
——— luridum guttatum
Ionopsis utricularioides.

From Mr. Lavater, Vera Cruz.

1837. Stanhopea venusta.

From J. C. Lees, Esq.

1833. Epidendrum gracile.

From R. Mangles, Esq.

1837. Lobelia ramosa.

From Major Sir Thomas Mitchell, N. Holland.

1838. Crinum australasicum
Bulbine suavis
Anguillaria dioica
Convolvulus erubescens
Psoralea cinerea
Picris barbarorum
Roperia aurantiaca.

From J. Nimmo, Esq., Bombay.

1837. Cynoglossum cælestinum.

From J. H. Pentland, Esq., Bolivia.

1839. Solanum oleraceum.

From John Reeves, Esq.

1838. Dolichos Soja.

From the Hon. W. F. Strangways.

1837. Bousingaultia baselloides
Convolvulus tubiflorus
Solanum vernicatum.

From the Hon. FREDERICK THELLUSSON, Florence.

1839. Portulaca Thellussonii.

From Mr. WATSON, Ceylon.

1833. Acanthophippium bicolor

Dendrobium macrostachyum

Geodorum fucatum.

From THOMAS WHITFIELD, Esq., Sierra Leone.

1832. Liparis guineensis.

II.—THE ESTABLISHMENT AND MAINTENANCE OF A COMPLETE COLLECTION OF AUTHENTIC SPECIMENS OF USEFUL OR ORNAMENTAL TREES, SHRUBS AND PLANTS.

THIS, one of the most important objects for which the Society's Garden was originally taken, had already been fulfilled to a very considerable degree prior to the year 1830, and the great extent to which the collection was likely to attain was the principal reason for renting so large a piece of ground. The collection in 1830 was still young, and far from being as complete as it evidently might become in the course of a few years. To provide against the expected increase, much of the ground was at that period unoccupied, and it was strongly recommended by the Committee of Enquiry in 1830, that such part as might not be immediately wanted, should in some way be disposed of, or let off, so as to diminish the annual expenditure. This however, the Council, after various attempts, found to be as impracticable as it always is to secure pecuniary returns of any consequence from the produce of an experimental garden; and, as the only alternative, they during the first years, cut off every source of expense which might be considered applicable to mere embellishment, or as not strictly necessary for the main objects of the Society. But as the Society's position became less embarrassed, and as the growth as

well as the increase of the collections, especially that of hardy trees and shrubs, required more space, the attention of the Garden Committee, under the direction of the Council, was turned to the arrangement and maintenance of the collections in such a manner as might best conduce to their utility, and to that "neatness, regularity and proper arrangement" so strongly recommended by the Committee of 1830. The whole of the garden is now arranged, and but little remains to be done, except in the purchase of gravel, to complete its details. There is much room indeed for embellishment, and the Council are particularly anxious to improve the appearance of the piece of water, but this they cannot effect without a larger expenditure than they at present feel themselves justified in proposing.

The following are the chief results under this head in the three different departments of the garden.

1.—Orchard and Kitchen Garden department.

In the Orchard a large number of varieties, originally received as new, when they bore fruit and were compared, were discovered either to be synonyms of others known by different names, or to be undeserving of cultivation, so that little or no extension has been required to the ground occupied by fruit trees. But the number of authentic specimens of varieties deserving of cultivation and from whence grafts or buds are annually distributed has most materially increased. The proved varieties now growing in the orchard are as follow:

Apples	910	varieties.
Pears	510	
Plums	160	
Cherries	60	
Peaches	30	
Nectarines	20	
Apricots	14	

Grapes	115
Figs	50
Nuts	24
Gooseberries . . .	230
Currants . . .	10
Raspberries . . .	8
Strawberries . . .	24
Total	2165

A standard collection of Kitchen Garden plants is always susceptible of much less precision and extent than an orchard; vegetables are mostly annuals or biennials, and must be propagated by seed, each variety of which must in many cases be sown at a considerable distance from all others, so as to prevent crossbreeding; such varieties are often the immediate result of soil and climate, or of special but well known and expensive modes of cultivation, and, when transplanted or resown under less favourable circumstances, they very soon degenerate. The Garden Committee have therefore thought it, in many cases impossible, in others unadvisable considering the limited funds at their disposal, to maintain a collection of well known vegetables; in the beauty of which they would always be excelled with a much less outlay by any market gardener who has a rich soil, abundance of manure, and the proceeds of a regular and steady sale at his command. The ground formerly occupied by the Kitchen Garden has therefore been in some measure reduced and limited to what is strictly necessary for the growth of samples only of the principal varieties of vegetables in common cultivation, and for proving such as are reputed to be new and possessing merit. The annual average number of foreign imported varieties sown in the garden has been about 90, and that of varieties procured in this country or presented by individuals nearly 120.

2.—Hothouse and Tender department.

The very great importance for the purposes of the Society of extensive protection for tender plants has ever been present to the Council and Garden Committee; in this, however, more than in any other department, they have been necessarily impeded by the limited resources of the Society. The construction of an extensive range of Conservatories and hothouses had been planned at the first laying out of the Garden, but for a long time there appeared little prospect of acquiring means to carry the plan into effect, and the Garden Committee were for several years obliged to confine themselves to the small houses originally erected, and to the glazed brick pits, with such small additions only as the exigency of the Garden absolutely required; the extent of glass of this description which, in the year 1830 consisted of 405 feet running of hothouses, and 457 of pits, having increased to 439 feet of hothouses and 712 of pits.

But as the receipts from the exhibitions held at the garden from the year 1833, when they were first established, showed in each year a steadily increasing surplus over the expenses incurred, the Council considered that they would scarcely be justified in continuing to apply the whole of the income derived from the present Fellows of the Society in liquidation of a debt incurred so long before. As soon therefore as they had liberated themselves from all liabilities likely to interfere with the due performance of the ordinary business of the Society, and could consider the remainder of the debt as a loan to be gradually paid off by instalments, they again brought under consideration the long projected plan for a range of conservatories, and as a preliminary step in the year 1835, they resolved that one half of the clear proceeds of the Garden exhibitions should be laid aside for this purpose.

The sums thus accumulated would necessarily for some years have been small when compared to the large outlay the new con-

servatories would require; with a view therefore to greater advantage in a financial point of view, this plan was so far modified as for some years to apply the whole surplus in paying off part of the bonded debt, and then for a like number of years to apply the whole or the greater part in the construction of conservatories; little or no actual outlay was therefore made until the commencement of the past year. In the mean time, however, various designs submitted to the Council were carefully considered in a special committee appointed for the purpose, and in the summer of 1838 the general plan of a range of glass, to consist of a central dome 120 feet in diameter, and of two wings, each 185 feet long, 30 feet broad and 26 feet high, was agreed upon. The details of one wing as now constructed according to the plans of Mr. AINGER, the Society's architect, were finally adopted by the Committee, and sanctioned by a full Council in the presence of His Grace the President, and this wing was ordered to be immediately executed. Contracts were entered into for the iron work and glazing by Messrs. BAILEYS, who by the excellence of their materials and the workmanlike manner in which they performed their contract have fully justified the expectations of the committee when concluding the agreement. It was hoped, that this wing would have been completed in the course of last summer, but the unceasing rains so impeded the works that this was found impossible; it is now however finished, and owing to the liberality of several zealous friends of the Society contains already a large number of valuable specimen plants. The Council have in this respect more especially to offer their thanks to

His Majesty the KING OF THE BELGIANS.
JOHN REEVES, Esq.
WILLIAM WELLS, Esq.
Messrs. LODDIGES.
Messrs. ROLLISSON.
And Mr. JOSEPH KNIGHT.

The Council trust that the general design, as well as the execution of this portion, will meet with that approbation from the Fellows at large, which it has already received from such visitors as have expressed an opinion upon it. The total cost of the building, including the boiler house and heating apparatus, the terrace and other ground work, as near as can be estimated (there being still some accounts not yet received) will be about 4500*l.* of which the Council are happy to state 2343*l.* were actually paid previous to the close of the last financial year on the 31st of March ; 500*l.* have since been paid and the whole will probably be liquidated in the course of the present month. The period when the Council will be enabled to proceed with the main body of the range will depend entirely upon the support which the Society may receive from the Fellows and the public at large.

The number of species and varieties now cultivated in this department are as follows:—Stove Orchidaceæ about 700; Miscellaneous stove plants about 1050; Greenhouse shrubs or perennials, about 1970; Tender annuals, about 50; making a total of about 3770.

3.—Hardy department; containing the Arboretum and Flower Garden.

It is to the Arboretum that the greatest additions in point of extent have been made since 1830, for besides the original site, it now occupies that of the old flower garden, the whole of the ground which lay waste at that time, as well as the part formerly occupied by hedge roses and other matters of mere botanical interest, and also a broad belt planted round the southern portion of the garden. The growth of the trees has enabled the Garden Committee to direct the turfing over of many clumps, of no beauty, but which were thought necessary on first laying out the Garden. By this means the specimen trees have been isolated with room to

develope their natural forms, and the collection, which as well as that of fruit trees, is unrivalled in any other part of the globe, now contains nearly three thousand species or varieties of trees and shrubs, exclusive of nearly a thousand garden Roses, and about two hundred garden varieties of Azaleas and Rhododendrons. The above numbers would have been much larger were it not that the unfavourable soil of the garden and its low situation, peculiarly exposed to spring frosts, prevent the cultivation of many species which are found to be perfectly hardy, in this country, under more genial circumstances.

The Flower Garden in 1830 consisted of a number of parallelogrammic beds in that part of the arboretum where the iron exhibition tent now stands; as the spot was wanted for the extension of the arboretum, the flower garden was removed to the site it now occupies, parallel with the Duke of Devonshire's road, and formerly used as a spare Dahlia ground. Of late years, since the proceeds of the exhibitions have admitted of some addition to the ornamental outlay, care has also been taken to distribute flowering plants in all parts of the arboretum, where they would grow and prove ornamental. But in this as in every other department of the garden management, the Garden Committee have to contend with many difficulties, arising on the one hand from the soil and situation of the garden as already alluded to, the great expense attending the purchase and cartage of peat, loam, dung, &c. and the want of sheds and other accommodations; and on the other hand, from the positive instructions of the Council to refrain from any outlay not of immediate necessity, so long as the Society still remains encumbered with a considerable debt.

The number of hardy ornamental perennials now in cultivation in the garden is about 2600, and the annual average of hardy annuals sown is from 250 to 300, making a total of above 9800 species or varieties of plants, in the Society's possession, exclusive of Fruit Trees, Roses, Azaleas and Rhododendrons.

The number of Visitors annually admitted to the Garden, from May 1st, 1830 to April 30th, 1840, has been as follows.

	Ordinary Admissions.	Exhibition Days.	Total.
From May 1, 1830 to April 30, 1831	5096		5096
1831 - 1832	6164		6164
1832 - 1833	6093		6093
1833 - 1834	6311	4900	11211
1834 - 1835	7139	7348	14487
1835 - 1836	5360	12882	18242
1836 - 1837	6118	17332	23450
1837 - 1838	5944	15998	21942
1838 - 1839	5407	15917	21324
1839 - 1840	6024	17614	23638

III.—The determination of the comparative merits of Species or Varieties, either already in cultivation or newly introduced.

This applies more especially to the Orchard and Kitchen Garden Department.

The great benefits produced by means of the Society's orchard, under the able management of Mr. Thompson, were generally acknowledged and specially referred to by the Committee of 1830. Since that time the same plan has been acted upon, and carried to a greater extent. As the varieties have fruited, observations have been made, and important results obtained, not only as relates to their intrinsic and comparative merits, but their general suitableness to our climate, or the special circumstances in which they are likely to be placed in this country. One important fact in par-

ticular may be mentioned, namely, that many new varieties of Pears have been made known, which are found to bear abundantly as standards, with fruit superior in flavour to that formerly cultivated, and only capable of being grown against walls.

The number of fruit trees of which notes have been taken since 1830 is as follows :—

Apples	-	388	of which	119	proved to be	synonyms and	32 false.
Pears	-	318	..	90	..	42	..
Plums	-	99	..	29	..	10	..
Cherries	-	55	..	15	..	3	..
Apricots	-	28	..	14	..	2	..
Peaches	-	41	..	21	..	4	..
Nectarines		16	..	4	..	3	..
Grapes	-	122	..	40	..	29	..
Nuts	-	33	..	18	..	2	..
		1100		350		127	

The collection of Gooseberries, Currants, Raspberries, and Strawberries might also be mentioned, as having received valuable additions.

The following are the best of those varieties which were either imperfectly or not at all known in this country previous to 1830 :—

Pears.

Althorpe Crassane
Winter Crassane
Marie Louise the 2nd
Fondante d'Automne
Louis Bonne (of Jersey)
Burgermeister
Emerald
Thompsons
Hacons Incomparable
Beurré Bosc
Nelis d' Hiver
Monsieur le Curé.

Plums.

Royale Hâtive
Ickworth Imperatrice
Knight's large green drying
Reine Claude Violette.

Cherries.

Royal Duke
Werder's Early Heart
Late Duke
Büttner's October Morello.

Grapes.

Zebibbo of Sicily
Chasselas musqué.

The number of Fruit trees, remaining to be proved, is very considerable. They consist of Apples, Pears, Cherries and Plums, from the continents of Europe and America ; and of Vines from the former, from Asiatic Russia, and even from the Deccan. Some of those from the latter country, described by Colonel Sykes in the Transactions, will in all probability fruit next season.

In the Kitchen Garden a great mass of notes has accumulated on the comparative merits of New Vegetables, the more interesting particulars of which are from time to time published in the Society's Transactions. It is however seldom that any new vegetables are raised of decidedly superior quality, and there seems to be no intelligible use in perpetuating kinds whose only merit is that of being different in some trifling particular from sorts of equal or superior value previously well-known.

It may however be stated that the following vegetables examined since 1830 have such a degree of excellence as renders them deserving of general cultivation :—

Peas.

Auvergne
Dwarf Brittany
Groom's Superb Dwarf Blue
Large Crooked Sugar.

Beans.

Dutch Long Pod
Marshall's Early Dwarf Prolific.

Haricots.

Early Dwarf Dutch
Prédome
Laon
Soissons
American Runner.

Cabbages.

Large Green Savoy (*Chou de Milan le plus gros tardif des Vertus*, of the French)

Pomeranian Cabbage (*Chou Conique de Pomeranie* of the French.)

Turnips.

Early Flat White

Early Flat Red

Knight's Protecting Brocoli

Large Asiatic Cauliflower.

Lettuces.

Malta

White Versailles

White Paris Cove Cos (*Laitue blonde Maraîchere*, of the French)

Green Paris Cove Cos (*Laitue Verte Maraîchere*, of the French)

Alphange Cos

Celery.

Celeri Turc

Celeri Violet

New Flat-stemmed White Solid.

Radishes.

Radis Rose demi-longue

New Yellow Short-topped Turnip-radish

Cresses.

Normandy

Golden

Miscellaneous.

Red Castelnaudary Beet

Cardon de Tours

Large Green-topped White Carrot

White Capsicum

Long-keeping Shallot

Courge d' Italie, or Coucourzelle

Victoria Rhubarb

Knight's No. 6 Potato (Very dwarf and early; well adapted for frames).

IV.—The prosecution of Experiments to ascertain the merits of any new processes or methods of cultivation connected with Horticulture.

There is perhaps no part of the business undertaken by the Horticultural Society, from which greater results appear to be expected

by a portion of the Fellows, with a less distinct idea of the means by which such results are to be produced, than the prosecution of *experiments;* and so much misconception prevails concerning this branch of horticulture, that the Council deem it advisable to advert particularly to the subject.

It is clear, that the means possessed by the Society can only be usefully applied to the investigation of questions upon which there exist well-founded doubts amongst persons practically acquainted with horticulture, and that renewed experiments upon matters well known to scientific Gardeners, for the purpose of satisfying the doubts of those who are less versed in the subject, can be of little advantage; to the latter therefore the Council hold out no encouragement.

In the case of enquiries into the phænomena of vegetable life, and those higher branches of knowledge, which in reality constitute the basis of horticultural practice, there are in all public establishments, from the very nature of those institutions, obstacles to the prosecution of such investigations, which are seldom perceived by those who are not intimately acquainted with the nature of physiological researches. Experiments in vegetable physiology require not only a power of correctly appreciating all the phænomena observable during their prosecution, and of what has already been ascertained by other enquirers, but those who are engaged in them should have both the scientific attainments and the zealous perseverance which so eminently distinguished our late PRESIDENT, and such leisure to watch and study the phænomena observed as may ensure a correct appreciation of the results; otherwise experimental enquiries tend to mislead and not to inform. It is needless to say, that researches of this nature are not to be expected from the inferior officers of the Garden; and the multiplicity of duties which devolve upon the higher officers renders it very difficult for the latter to carry them on to any great extent.

The following case sufficiently illustrates this statement:—

For three years attempts were made to grow the Melon in beds of earth placed over water, in a stove exposed to the brightest light of the sun, in imitation of the practice in the floating islands of Cashmere, where this fruit attains so great a degree of excellence. After repeated trials, however, it was found, that although the plants under such treatment grew with great luxuriance, and fruited in as much abundance as usual, yet that the melons wanted flavour, that the plants became unhealthy, that no means could be found to prevent the leaves flagging daily, and that several other symptoms presented themselves, of which there was no apparent explanation. Although the experiments were conducted in a stove occupied by other plants, yet it was not under circumstances materially unfavourable. Certainly the results were not deemed by any means conclusive; but when it became a question whether the experiments should be repeated, no sufficient means could be found for varying the conditions without incurring considerable expense, and the causes of failure were so obscure that no probability existed of their being discovered, without devoting such an amount of time as the other duties of the officer, who had charge of them, rendered it impossible for him to afford; they were therefore prosecuted no further.

Amongst those experimental researches, also, which the Society possesses the means of carrying on usefully, a large proportion of the results will be either negative, or of so little apparent moment as to be undeserving of public record, and yet each in itself may have some valuable practical bearing, and may contribute to the improvement of the skill in gardening of the persons by whom such experiments have been conducted; and all of them will be found to have required much more time and attention on the part of the Vice Secretary, as well as of the respective under gardeners, than the mere announcement of the results can give an idea of.

Among the principal subjects to which attention has been directed with this view since the year 1830, the following may be mentioned as the more important;

In the Fruit and Kitchen Department, various modes of training and pruning fruit trees under a variety of circumstances, the application of bottom heat, the effects of draining and treating the borders in which wall fruit is planted, the influence of heat and moisture on Vines, with and without ventilation, various modes of treating Pine Apples, and very extensive experiments on the Potatoe in connection with and consequent on those of Mr. KNIGHT.

In the Hothouse department, besides the trial of different methods of heating with hot water, to which special reference is made below, much has been done to investigate the comparative merits of different descriptions of fruit, many experiments have been tried on the special modes of treating Orchidaceous epiphytes, and a careful investigation has been for some time carrying on concerning the effects, real or supposed, of *kyanized* timber on the growth of plants, the results of which cannot of course be made known until repeated trials have removed all doubts that may yet be entertained on the subject. The recent construction of the new Conservatory may also be regarded as a great horticultural ex periment, for the purpose of solving some very interesting problems connected with artificial climate.

In the Hardy department, where less art is required to assist or control natural effects, there is necessarily less to be done in the way of experiment, but here also much attention has been paid to various modes of raising seeds with the greatest certainty, to the best means of protecting half-hardy plants from winter or spring frosts, and to the powers of enduring cold possessed by different species.

With regard to heating by means of hot water, it must be obvious, that, from the want of means to construct houses, the Society

has not been in a condition to institute comparative trials of the many schemes for heating which have been proposed of late years; and the Council are of opinion, that, under any circumstances, it would be a waste of the Society's funds to apply them in furtherance of such projects, unless they involve some new principle, or present such a deviation from the usual application of principles as would justify the expectation of important results. They have however by no means neglected this subject as the following statement will shew:—

At the close of the year 1832 Mr. Perkins was employed to apply to a small hothouse, then recently constructed, his method of heating by means of numerous small pipes, which was at that time much talked of as an important invention. After repeated trials, during two or three months, the apparatus having once exploded, and proving at all times unmanageable, the plan was abandoned.

In the year 1838 one of Mr. Rogers' conical boilers was applied to heating a range of pits 77 feet long, with two inch pipes; an experiment which completely fulfilled the expectations that were entertained of its efficiency. This led to the adaptation of two similar boilers in the year 1839 to other pits, 154 feet in length, which had previously been heated with a common square boiler, and four inch pipes. Partly in consequence of the old apparatus not having been so perfect as could have been wished, and partly in consequence of the greater temperature to which the boilers were exposed, this experiment was not so satisfactory as the last, but it had the advantage of leading to some important improvements in the construction of the apparatus.

An attempt was also made in 1838 to heat a small range of pits with hot water pipes warmed by an Arnott stove; but after the purchase of pipes, and twice fixing the apparatus, the boiler proved so defective as to be unfit for use, and by that time the evidently superior efficiency of Mr. Rogers' conical boiler had rendered it

unnecessary to renew the experiment with an Arnott stove, in combination with a boiler of a more perfect construction.

Finally, a hot water apparatus, executed by Messrs. Baileys of Holborn, has been applied by Mr. Ainger, the Society's Architect, to heating the wing just completed of the new Conservatory. The boilers are placed in a detached building sixty feet from the conservatory. The water is conveyed by four pipes, each six inches in diameter, which are enclosed in a dry tunnel open at the ends, but having double walls on all sides. The two thicknesses of wall and the included stratum of air effectually prevent any dissipation of the heat, and the tunnel having a gradual ascent towards the house becomes the means of maintaining a ventilation of warm air, sufficient probably to meet the whole winter demand.

This subterraneous part of the apparatus, instead of causing any loss, will, it is confidently expected, produce its full share of effect as regards heat, with the advantage of a *warm* instead of a *cold* winter ventilation, while the conservatory is relieved from the incumbrance of a large quantity of piping.

The four six inch pipes, as soon as they enter the conservatory, branch off into eight of four inches diameter, the gross length of which is nearly 1600 feet, and they contain, together with the larger pipes and the boilers, 1620 gallons. So large a body of water will maintain the temperature of the house for a considerable period in case of any accident or neglect, and the circulation is so rapid that the whole is heated sufficiently for the purpose of the house within forty minutes from the first lighting of the fires.

In connection with this subject it may be added, that all the experience obtained at the Garden goes to demonstrate the great inferiority of flues to hot water pipes as a mode of heating.

Under the head of experiments and observations may be also mentioned the Meteorological Journal, continued to be kept with great care by Mr. Thompson, the Under Gardener in the Fruit

Department, upon the plan already adopted previous to 1830; and a series of observations upon the variations of the temperature of the earth in which plants grow, from which useful practical conclusions will, it is hoped, be eventually deduced.

V.—The publication of Horticultural Papers and Reports, either the results of Experiments and Observations made by the Society, or communications received from Fellows and others.

Since the 1st of May, 1830, Parts 4 and 5, completing the 7th and last Volume of the 1st Series of the Society's Transactions; seven Parts, composing the 1st Volume of the 2d series; and four Parts of the 2d Volume have been published, and the 5th part of the same Volume is now in preparation, and will shortly be ready for distribution. During the first years of this period, two parts were generally prepared in each year, but latterly their publication has been much less frequent, and that from various causes. Transactions of scientific Societies are never undertaken as a source of profit to the Society, but rather as affording a means for the publication of scientific papers of merit, the sale of which cannot always be expected to reimburse the expense, and which might therefore, without such a channel of communication, frequently remain unknown. Of late years, however, the great impulse given to horticulture all over the country has occasioned the multiplication of periodical works in this department of science, several of which have a sufficient sale to enable their editors to offer pecuniary remuneration to their contributors, a course which it would be foreign to the objects of the Horticultural Society to pursue.

So much has also now been published on the subject, that

amongst the papers communicated to the Council, many have either been forestalled in some of the periodicals, or are of too little importance to be printed in the Transactions. In order, however, that nothing really useful, though relating only to minor points, may remain unpublished, after being communicated for the purpose, the Council commenced from the 1st of May, 1838, to print abstracts of the proceedings of the Society in an 8vo. form, analogous to those lately commenced by other scientific bodies. In these proceedings all papers, either short or of minor importance, are inserted or abstracted; and such only as it is thought advisable to give at length are reserved for the Transactions, in which are also printed the reports on experiments and observations made in the Garden. The papers of the latter description, published since 1830, are—

1. *Fruit Department.*

On Pine Apples, by Mr. Munro, printed in the 2d Series, Vol. I, page 1.

On Apricots, by Mr. Thompson, Vol. I, p. 56.

On Gooseberries, by the same, Vol. I, p. 218.

On Cherries, by the same, Vol. I, p. 248.

On Various Fruits, by the same, Vol. II, p. 108.

2. *Kitchen Garden.*

On Potatoes, detailed reports on a very extended course of Experiments, by Dr. Lindley, Vol. I, p. 153, p. 445, and p. 524, and by Mr. Thompson, Vol. II, p. 156.

On Beans, by Mr. Gordon, Vol, I, p. 369.

On Peas, by the same, Vol. I, p. 374.

3. *Hothouse Department.*

On Epiphytes, by Dr. Lindley, Vol. I, p. 35.

4. *Hardy Department.*

On the Growth of Tobacco, by Mr. Wilson, Vol. I, p. 208.

On Chrysanthemums, by Mr. Munro, Vol, I, p. 392.

On various plants received from Mr. Douglas, by Mr. Bentham, Vol. I, p. 403, and p. 476.

Besides a great number of Notes or Reports on individual species and varieties.

Dr. Lindley's most valuable and detailed report, on the effects of the frost of 1839, printed in the 2d Vol. p. 225, was also founded on data, observed by himself at the Society's Garden, or obtained from the principal horticulturists of the country, most of whom are Fellows or Correspondents of the Society.

The Meteorological observations are regularly inserted in the Transactions.

The Council would also on this occasion advert especially to the valuable papers on vegetable physiology, which their late President, Mr. Knight, continued to communicate up to within two months of his lamented death, a source of information which every follower of the science must regret to see for ever closed.

Besides the "Transactions," and the "Proceedings" of the Society, a new edition of the Catalogue of fruits in the Society's garden, with notes on each variety, was published in 1831; and the Council have moreover thought it incumbent on them on all occasions to communicate information required by the Fellows of the Society, and to give their assistance in the publication of any work of respectability, being fully persuaded that one grand object of the Society is the dissemination of horticultural knowledge, and that nothing is more contrary to the spirit of the association than jealously to reserve for themselves that which might be more speedily and usefully published by others. It is thus that much which relates to the Society's collection of trees and shrubs, will be found in Mr. Loudon's Arboretum and Fruticetum Britannicum, and observations and experiments made at the Garden have been the groundwork of many of the principles laid down in Dr. Lindley's Theory of Horticulture.

VI.—The distribution of new horticultural objects amongst the supporters of and contributors to the Society.

The desire for dispersing valuable horticultural objects so as to render them generally accessible to cultivators was the origin of the system of distribution undertaken by the Society. The extent to which the Garden Committee have been enabled to carry these distributions appears in some instances to have given rise to an erroneous idea of their object; and it is with great regret that the Council have observed on the part of a few, either now or lately, Fellows of the Society, an opinion that they were entitled to demand and to receive in each year not only the value of their subscriptions, but much more. The Council, therefore, trust that they may take the present opportunity of stating distinctly, in order to prevent all future misunderstanding, that the distribution of common plants, not introduced by the Society, and readily to be procured in the Nurseries, is in their opinion beside the objects for which the Society was instituted, and to which its funds ought to be applied.

Many of the most valuable importations are received, or can be multiplied only in quantities far from sufficient to supply the whole of the Fellows of the Society. There are also many Members who are only interested about special branches of horticulture, who have no gardens for the growth of horticultural produce, or who would attach no value to certain descriptions of seeds or plants which may be of great importance to others. For these reasons general indiscriminate distribution is often impossible, and in many cases it would be a mere waste of the Society's funds.

Where, however, in the prosecution of the objects of the Society, opportunities arise of benefitting individuals, it is but

fair that those who have contributed to produce such results should be the first to profit by them; and it is certain, that the more generally any new importations are disseminated over the country, the better chance there is of their becoming permanently established in it.

Influenced by these considerations, the Garden Committee, under the instructions of the Council, have always desired to keep in view the following principles in the regulation of distributions.

That all seeds, roots, grafts or plants received from abroad in sufficient quantities be immediately distributed.

That all such objects received in small quantities be sown or planted in the Society's garden, with a view to future distribution.

That horticultural objects in general circulation among the nurserymen, and not introduced by the Society, be cultivated as little as possible for distribution.

That with the exception of objects specially sent for distribution at the meetings, or cuttings or seeds of which there is an abundant supply, and which require to be given at a specific time, no articles be delivered excepting to Fellows who have applied for them.

These applications are made in writing addressed to the Secretary, or personally at the garden, either generally for such seeds as are received or raised in sufficient quantities to be included in the general distributions during the spring, or specially for particular classes or individual objects, and where there is not a sufficient supply to meet all the applications, they are invariably attended to in the order in which they are received.

The Garden Committee have also deemed it incumbent on them to be as liberal as circumstances would allow in their distributions to foreign as well as home Correspondents, in exchanges, and in the supply of articles applied for by Her Majesty's Colonial Government.

The articles distributed since May 1830 have been chiefly:

Articles imported, viz:—Californian roots and seeds, received

from Mr. Douglas in 1833; Mexican Orchidaceous epiphytes, bulbs and seeds received from Mr. Hartweg as stated above; a supply of vegetable and other seeds which are either new, or do not ripen well in this country, and which are annually imported from Paris, and occasionally from Hamburgh; seeds of Pinus nigricans received from Baron Jacquin in 1830; and a quantity of Chilian seeds purchased from Mr. Bridges in the year 1832.

Articles supplied from the Garden, viz:—Grafts of fruit trees; cuttings of ornamental trees and shrubs; plants of hardy, tender or stove perennials, introduced by the Society, or originally raised in the Society's garden; seeds collected in the Society's garden; Dahlias; and occasionally plants or roots of other descriptions specially applied for, and which the Garden Committee happened to have the means of furnishing.

The amount distributed in each of the last ten years, has been as follows:—

		Plants.	Packets of Seeds.	Parcels of Cuttings.
1830-31.	To Members	5,504	18,603	4,630
	To Foreign Countries, Correspondents, &c.	329	1,577	255
	To Her Majesty's Colonies	22	97	—
	Total	5,855	20,277	4,885
1831-32.	To Members	8,917	23,515	5,250
	To Foreign Countries, Correspondents, &c.	705	260	1,217
	To Her Majesty's Colonies	242	16	—
	Total	9,864	23,791	6,467
1832-3.	To Members	10,767	30,841	4,711
	To Foreign Countries, Correspondents, &c.	358	588	446
	To Her Majesty's Colonies	305	840	—
	Total	11,430	32,269	5,157

		Plants.	Packets of Seeds.	Parcels of Cuttings.
1833-4.	To Members	10,051	22,199	5,068
	To Foreign Countries, Correspondents, &c.	479	965	528
	To Her Majesty's Colonies . . .	—	44	—
	Total	10,530	23,208	5,596
1834-5.	To Members	10,790	22,989	5,080
	To Foreign Countries, Correspondents, &c.	448	1,016	788
	To Her Majesty's Colonies . . .	—	121	—
	Total	11,238	24,126	5,868
1835-6.	To Members	14,122	42,079	5,837
	To Foreign Countries, Correspondents, &c.	245	826	892
	To Her Majesty's Colonies . . .	64	171	8
	Total	14,431	43,076	6,737
1836-7.	To Members	10,056	41,238	5,793
	To Foreign Countries, Correspondents, &c.	166	796	477
	To Her Majesty's Colonies . . .	56	241	—
	Total	10,278	42,275	6,270
1837-8.	To Members	7,155	55,985	3,958
	To Foreign Countries, Correspondents, &c.	585	948	555
	To Her Majesty's Colonies . . .	60	1,206	5
	Total	7,800	58,139	4,518
1838-9.	To Members	6,756	49,051	3,606
	To Foreign Countries, Correspondents, &c.	442	1,551	628
	To Her Majesty's Colonies . . .	149	937	—
	Total	7,347	51,539	4,234

		Plants.	Packets of Seeds.	Parcels of Cuttings.
1839-40.	To Members	6,407	43,403	4,567
	To Foreign Countries, Correspondents, &c.	113	658	139
	To Her Majesty's Colonies . . .	32	833	133
	Total	6,552	44,894	4,839

Making in ten years a Total of

	Plants.	Packets of Seeds.	Parcels of Cuttings.
To Members	90,525	349,903	48,500
To Foreign Countries, Correspondents, &c.	3,870	9,185	5,925
To Her Majesty's Colonies	930	4,506	146
Grand Total	95,325	363,594	54,571

VII—The encouragement of horticulture generally by the award of medals and prizes for absolute or comparative horticultural merit.

The Council are fully aware, that horticultural merit is not confined to the production of individual specimens of plants of superior value, but that quite as much or even more practical skill may be exemplified in other ways; as for example, by the regular, steady, economical, and neat cultivation of a garden, so as to produce an abundant and constant supply of fruits, vegetables or flowers, no individual of which may have any extraordinary intrinsic merit; or again, by the careful and persevering prosecution of horticultural experiments and observations; and that in many such cases a gardener may have become deserving of the most distinguished reward. But very few cases of this kind could come under the direct cognizance of the officers of the Society, or of any judges whom the Council could appoint, and it would be impossible to arrive at a

just conclusion as to their comparative merits. Hence it scarcely ever occurs that prizes can be given for skill of such a description, and the Society has therefore been generally under the necessity of confining them strictly to specimens exhibited either at their periodical meetings in Regent Street or at the special exhibitions held at the garden.

Attempts have indeed been made at various times to give encouragement to provincial horticulturalists, whose distance from London prevented their exhibiting at the Society's shows, and this more especially by means of local horticultural Societies, to whom the award of the London Society's medals was entrusted; but so many inconveniences have been found to arise from this practice, that it has been in a great measure discontinued.

When first the example of the Horticultural Society of London was followed by the establishment of local Societies on a similar plan, the latter were few in number, and from the manner in which they were supported it was thought by the then Council, that they might be safely entrusted with the award of prizes in cases which could not otherwise come to the London Society; therefore under regulations published in 1826, and inserted in the 7th vol. of the 1st series of the Transactions, a large silver medal was annually given to each Society in correspondence. In a few years however, the number of these associations increased considerably, with very different degrees of importance; it was ascertained that some of them had awarded their medals in cases where there was no special merit, and it became as difficult to control their awards as it would have been to give the medals without their intervention. It was therefore determined by the new Council of 1830 not to admit any more Societies into correspondence until the result of other regulations issued relative to the awards should be ascertained; and, after some years further trial, the attempt to afford any real encouragement to horticulture by this means was given up as hopeless. An entirely new plan was then adopted,

with a view merely to assist local horticultural Societies in obtaining seeds and grafts, as well as medals, without pecuniary gain or loss to the London Society.

The new regulations as printed in the appendix to the 1st vol. of the 2nd series of the Transactions were circulated in 1834, and the following Societies have since then more or less availed themselves of the terms therein proposed.

The Bath Horticultural Society.
The Cornwall Horticultural Society.
The Devon and Exeter Horticultural Society.
The North Devon Horticultural Society.
The Newcastle Horticultural Society.
The Wilts and General Horticultural Society.
The Winchester Horticultural Society.

With regard to the medals awarded for objects exhibited at the ordinary meetings in Regent Street, the practice was originally for the officers of the Society to take notes at the meetings relating to the more important exhibitions, and to report upon them once or twice in the year to the Council, who thereupon selected such cases as they thought deserving of medals. But this practice produced some inconvenience, especially in the long time which elapsed before the exhibitor could be informed that a prize had been awarded to him, and upon the whole it was not found that the expectations originally entertained from the measure were fulfilled. A special committee was therefore appointed in 1836, to consider the means of rendering the meetings in Regent Street more efficient, and a series of regulations for the award of medals on these occasions was proposed and ultimately adopted. Their effect has been to produce at all seasons of the year exhibitions evincing a continual increase of skill on the part of gardeners, and to secure during the spring a numerous attendance of visitors.

The regulations now in force are as follows:—

At the ordinary meetings of the Society in Regent Street it is

the practice to award medals for specimens of horticultural productions, provided the latter possess sufficient merit to deserve such a distinction; no subjects being excluded, except those which may have gained medals at some of the garden exhibitions within a short time previously.

It is to be observed that, except on special occasions, the object of the Council is not to excite at these meetings a spirit of rivalry among the exhibitors, by giving medals to the best only of those whose specimens may be placed before the Society, but on the contrary to reward merit wherever it is sufficient to justify such a measure.

The medals which the Society has the power of granting are, the Banksian, the Knightian, and the Large medal, they are given in silver, at the discretion of the judges, very much according to the following rules :—

The large medal, for remarkably handsome ornamental plants of recent introduction, which have never been exhibited previously.

The Knightian, for specimens of eatable fruits, and of ornamental stove or greenhouse plants, and

The Banksian, for specimens of ornamental hardy plants, and for culinary vegetables.

All persons, whether Fellows of the Society or not, may exhibit for these medals; but no person can gain more than one medal of the same description at any one meeting.

Exhibitors who may, in the course of time, acquire a right to many medals of the same description, are allowed the option of either receiving their medals immediately after they have been awarded, or of waiting until there is a sufficient number due to admit of their exchanging their silver medals for gold ones, or the latter for objects of a higher value, according to the scale adopted for the exhibitions at the garden.

All objects intended for examination by the judges must be delivered two hours before the time of meeting, that is to say, by one o'clock in summer, and by twelve o'clock in winter. Ob-

jects sent in at a later hour may be exhibited, but the judges are not expected to take cognizance of them.

The special exhibitions at the Society's garden have already been the subject of a report printed at the close of the 1st volume of the 2d series of the transactions, and containing the history of these exhibitions from their commencement to the close of the year 1834. Since that time they have been regulated upon the same plan, with such alterations only as experience shewed to be advisable, especially in the mode of making the award, and in the classification of subjects for which prizes are offered. Large additions have been made to the stock of tents, and other materials for the reception of the exhibitions, as well as for the accommodation of visitors.

The Council have observed with much satisfaction that the anticipations which they entertained of the effect likely to be produced upon the skill of gardeners by these great exhibitions have been fully realized. The beauty of the subjects exhibited has been gradually increasing, and in some classes of plants, particularly Pelargoniums, Cape Heaths, and Orchidaceous plants, in a very remarkable degree; while the interest taken in them by the public is strongly attested by the very large number of visitors who annually resort to them. In the present year the regulations for the exhibition of fruits have been altered, and the value of the prizes considerably increased; and it is confidently expected that this measure will have a beneficial result.

The present regulations under which the exhibitions are conducted are as follows :—

The exhibitions take place on three Saturdays in the months of May, June and July respectively.

All persons, whether Fellows of the Society or not, are at liberty to send subjects for exhibition.

Where it is required, the Society defrays the fair and reasonable expenses actually incurred by private growers in conveying objects

to and from the garden, provided a detailed statement is signed by the exhibitor as a declaration of its correctness.

Exhibitors are required to notify in writing, previous to the day of meeting, what they intend to supply, in order that due provision may be made for the proper distribution of the plants, &c, on the exhibition tables. The best places are secured for those who comply with this request.

As the garden is opened at 1 P. M. for the admission of visitors, it is necessary that the judges should proceed to consider the respective merits of the exhibitions by 11 A. M., and as it is absolutely indispensable that the tables should be in order by that time, no subject for exhibition is admitted into the garden after half-past nine o'clock in the morning; and if the owners of any locked-up boxes, or other cases already received, are not in the exhibition tent at the said hour, such cases or boxes are excluded from competition for medals.

All specimens, whether of fruit or flowers, remain untouched until after six o'clock, when they are delivered into the hands of the exhibitors, who are most particularly requested not to give away their cut flowers in the tents, as much confusion has occasionally been produced by that practice.

Exhibitors, or other persons required to assist in bringing in the objects for exhibition, are admitted before half-past nine in the morning.

Every principal exhibitor is furnished with one pass-ticket, which is not transferable, for which he is to apply before eleven o'clock, at which hour the garden is cleared of all persons not officially detained there.

Exhibitors may re-enter the garden after one o'clock, when they are required to deliver up their pass-tickets.

Provision is made by the Society for placing on the tables such specimens as may be furnished by exhibitors; but as some flowers travel most securely when fixed permanently in boxes, and as many

persons prefer their own stands, any exhibitors are allowed to use their own boxes or stands, under the following conditions:—

No box or stand may exceed eight inches in height at the back, or eighteen inches in depth from front to back. The lids of all boxes must either be loose or made to unhinge. No box with a fixed lid is, on any pretence, allowed to stand upon the tables. If a box not constructed of the dimensions above given is sent in, it may be placed on the tables, if there is room for it, but it is liable to exclusion.

The Society distributes in gold or in silver three descriptions of medals; namely, the large, the Knightian and the Banksian. Persons gaining several medals of the same denomination at the three meetings, are allowed to exchange them in the following proportions:

A silver Banksian medal is represented by the number	2
A silver Knightian	3
A large silver	5
A gold Banksian	15
A gold Knightian	20
A large gold	40

If within one month after the third exhibition in the year no intimation is received from an exhibitor of the manner in which he desires his medals to be disposed of, all the medals due to him are prepared and transmitted to him through the usual public conveyances, without further notice.

The subjects of exhibition are divided into two classes; for the first class nurserymen compete with nurserymen, and private individuals with private individuals; and separate prizes are awarded accordingly: for the second class no distinction is made between the nurserymen and private individuals.

No articles not of horticultural produce are allowed to be placed upon the tables.

Exhibitors are recommended to make themselves acquainted with the arrangements described in the following list, as they are in all cases required to state under what letter their plants are to be exhibited; and as in case any errors in the awards of the judges should occur, in consequence of mistakes on the part of exhibitors in entering the objects they may bring to the meetings, the society does not undertake to rectify such errors afterwards.

When an exhibitor receives a first prize in any one letter, he is not entitled to receive any other medal in the same letter.

The number of heads designated by these letters, and the prizes offered for each, generally vary in each year, those fixed on for the present year are as follows:

CLASS I.—*Subjects for which Nurserymen and Private Persons exhibit independently of each other; separate Medals being offered for the best exhibitions among Nurserymen, and for the best among Private Growers.*

	Gold Knightian.	Gold Banksian.	Large Silver.	Silver Knightian.	Silver Banksian.
A. Azaleas, greenhouse, in varieties, number not to exceed twelve plants	- -	First Prize	Second Prize	Third Prize	- -
B. Carnations, not exceeding thirty blooms	- -	- -	- -	First Prize	Second Prize.
C. Pinks, ditto	- -	- -	- -	Ditto	Ditto
D. Piccotees, ditto	- -	- -	- -	Ditto	Ditto
E. Cacti, melon-shaped, whether in flower or not. No exhibitor to show the same plant at more than one meeting during the season, otherwise the award to be void	- -	- -	First Prize	Second Prize	- -
F. Heaths, Cape kinds, in collections of 30 species	First Prize	- -	Second Prize	Third Prize	- -
G. Ditto, in collections of 6 species	- -	First Prize	Ditto	Ditto	- -
H. Exotic Orchidaceæ, in collections of *not fewer than* six species	First Prize	- -	Ditto	Ditto	- -
I. Ditto of three species -	- -	First Prize	Ditto	Ditto	- -
K. Ditto single specimens of NEW and HANDSOME species	- -	- -	First Prize	Second Prize	Third Prize
L. Ditto single specimens	- -	- -	Ditto	Ditto	Ditto
M. Pelargoniums, in collections of 12 varieties	- -	First Prize	Second Prize	Third Prize	Fourth Prize
N. Rhododendrons, in pots, not fewer than 12 plants, in 12 varieties	- -	- -	First Prize	Second Prize	Third Prize
O. Roses, in collections	- -	First Prize	Second Prize	Third Prize	Fourth Prize
P. Stove, or Greenhouse Plants, in collections of not more than 60, nor less than 20 plants	First Prize	Second Prize	Third Prize	- -	- -
Q. Stove, or Greenhouse Plants, in collections of six single ornamental specimens of different SPECIES	- -	First Prize	Second Prize	Third Prize	- -
R. Herbaceous Calceolarias, in collections of 12 pots	- -	- -	First Prize	Second Prize	Third Prize
S. Shrubby ditto ditto	- -	- -	Ditto	Ditto	Ditto

CLASS II.—*Subjects with regard to which all Persons are admitted to equal competition, no distinction being made between Nurserymen and Private Persons.*

T. Alströmerias, in collections of 12 pots	-	-	-	-	First Prize		Second Prize		Third Prize			
V. Cacti, the tall kinds, in flower .	-	-	-	-	Ditto		Ditto		-	-		
W. Fruit, miscellaneous collections of, consisting of at least *three* different kinds, Peaches and Nectarines being considered as forming only one kind	First Prize		Second Prize		Third Prize		-		-	-		
X. Grapes	-	-	-	-	First Prize		Second Prize		Third Prize			
Y. Pine Apples	-	-	-	-	Ditto		Ditto		-	-		
Z. Peaches or Nectarines, in dishes of six specimens	-	-	-	-	-	-	First Prize		Second Prize			
AA. Single Plants, NOT IN FLOWER, if very rare, and *ornamental* on account of their fine foliage . . .	-	-	-	-	First Prize		Second Prize		Third Prize			
BB. Very finely-grown single specimens of ornamental plants, whether old or new, in flower . . .	-	-	-	-	Ditto		Ditto		Ditto			
CC. Single specimens of *new* ornamental plants. The medals for these will be given entirely at the discretion of the judges	-	-	-	-	-	-	-	-	-	-		
DD. Miscellaneous subjects of *Horticultural produce*, not comprehended under any of the foregoing heads . .	-	-		-	-	-	First Prize		Second Prize			

The judges have the power of increasing or diminishing the number and value of medals offered by the Society for particular objects, and also of conferring medals in cases not contemplated in these regulations, if they think it desirable to do so.

The only absolute directions which the judges receive from the Council are, firstly, to bear in mind that the Society's medals are offered, not only for new and curious objects, but for remarkable specimens of horticultural skill, the design of the Council in instituting these meetings, being not merely to encourage the collector, but more especially to reward the success of the skilful gardener; and secondly, not to make any award in cases where the objects exhibited do not appear worthy of a medal; otherwise a bad single exhibition may obtain a prize, merely because there is no better exhibition of the same class to oppose it.

The garden is opened, on each exhibition day, to Fellows and to visitors, at one o'clock, under the following regulations:—

All Fellows of the Society are admitted without tickets, from one till six o'clock, on signing their names in a book at the entrance.

Visitors can be admitted only by tickets, to be obtained through Fellows of the Society.

Any number of tickets are delivered to Fellows, on their personal application or written order, at the price of five shillings each ticket.

Each Fellow of the Society is also allowed to purchase a certain number of tickets, now fixed at twenty-four, at the reduced rate of three shillings and sixpence each, provided they be applied for on or before the first ordinary meeting of the Society in April, and actually taken out before the second ordinary meeting in April.

Each ticket is available for the admission of one visitor after one o'clock, to either of the three exhibitions, at the option of the visitor.

All applications for tickets must be made at the Society's office, 21, Regent Street.

Any tickets issued at the garden on the days of exhibition are at the advanced price of ten shillings each.

No tickets whatever are issued except on the personal application or written order of a Fellow of the Society.

The number of medals annually awarded at these meetings has been as follows :—

ORDINARY MEETINGS.

				Large Silver.	Silver Knightian.	Silver Banksian.	Total.
From May 1,	1830,	to April 30,	1831	1	..	6	7
,,	1831	,,	1832	1	..	13	14
,,	1832	,,	1833	..	..	5	5
,,	1833	,,	1834	3	..	1	4
,,	1834	,,	1835	..	..	1	1
,,	1835	,,	1836	..	..	4	4
,,	1836	,,	1837	5	44	35	84
,,	1837	,,	1838	6	42	37	85
,,	1838	,,	1839	1	28	54	83
,,	1839	,,	1840	5	23	47	75
			Total	22	137	203	362

SPECIAL EXHIBITIONS.

Dates.	Number of Exhibitions.	Medals awarded.						Number of Visitors.
		Gold Knightian.	Gold Banksian.	Large Silver.	Silver Knightian.	Silver Banksian.	Total.	
1831 to 1834	..	..	14	62	..	95	171	..
1835								
May	60	..	5	11	..	10	26	1908
June	84	..	3	7	..	20	3	5362
July	96	..	5	16	..	27	48	5612
1836								
May	132	2	..	12	21	..	35	3480
June	136	2	..	13	24	6	45	7764
July	113	3	..	12	24	8	47	6088
1837								
May	106	3	3	21	22	16	65	750
June	136	2	2	19	24	28	75	8785
July	141	1	1	13	26	30	71	6463
1838								
May	179	3	3	15	26	20	67	2966
June	141	3	5	13	30	22	73	6405
July	179	3	2	18	31	30	84	6546
1839								
May	161	3	8	18	17	14	60	3044
June	122	3	9	21	25	15	73	8789
July	172	2	8	18	23	32	83	5781
Totals		30	68	289	293	373	1053	

The total number of medals awarded since 1830 is as follows :—

	Gold.	Silver.	Total.
At the Ordinary Meetings . . .	..	362	362
At the Special Exhibitions . . .	98	955	1053
To Provincial Societies and others	..	63	63
Total	98	1384	1478

The actual cost of these medals to the Society, including that of three new dies, amounts to the sum of £3319..12..0.

VIII.—The instruction of young men in the art of gardening.

Since the first establishment of the garden the Council have been anxious to render it conducive to the improvement of the Education of young men intended for gardeners. Not that it was ever supposed that such an establishment as this necessarily is, would supply all the information and practical experience to be obtained in a private garden; for it was always sufficiently evident that many things are required in private families which are not wanted in a public establishment. But it was expected that young men, placed in the garden for two or three years at the end of their period of education, would become acquainted with the best methods of cultivation, would acquire a good knowledge of the best varieties of vegetables and fruits, would be witnesses to the success or failure of experiments, and would increase their acquaintance with the names of plants to a much greater degree than in a private garden; and that thus they would have valuable opportunities of improving themselves. It was further anticipated that the habits of self-control and discipline which might be expected to arise in any public establishment under efficient superintendence, would give them habits of order and good conduct, and a knowledge of the world, which would be useful to them when entrusted with the management of others.

But for a long time these anticipations on the part of the Council were but partially realized; chiefly owing to the very imperfect preliminary education of the young men recommended for employment. Some were found totally unacquainted with the commonest

details of the gardener's art; others were illiterate in a lamentable degree; and notwithstanding the excellent example set by many who are now at the head of their profession*, upon the whole it must be admitted that several of the men received in the garden were little improved in consequence.

It was then determined to secure by fresh regulations, the possession of a competent knowledge both of gardening and the simpler elements of education by those who became candidates for admission into the garden, and to require every one eventually to submit to an examination on some of the subjects incidentally connected with his profession; without passing which in a creditable manner, it was decided that he should not be recommended by the Society to a situation. These regulations, first introduced some years since, and gradually improved upon as suggested by experience, have been evidently beneficial in a high degree; they have had the effect of excluding persons whose previous habits rendered them unlikely to become respectable gardeners, and thus they have improved very materially the class of applicants for employment. Good examinations have been passed; and, considering the short time that the regulations have been in force, the number of men recommended to places, all of whom have conducted themselves to the satisfaction of their employers, is considerable.

* The Council would mention more particularly the names of Mr. Paxton of Chatsworth, Mr. Barron of Sheffield, Mr. Bailey of Nuneham, Mr. Booth of Carclew, Mr. Collinson of Eaton Hall, Mr. Craggs of Killerton, Mr. Alexander Campbell of the Botanic Garden Manchester, Mr. Dick of Dale Park, Arundel, Mr. Duncan of Basing Park, Mr. Jennings of Knowsley, Mr. Lumsden of Cambridge House near Twickenham, Mr. Ross of Penrhyn Castle, Mr. Traill of Cairo, Messrs. Thompson and Gordon at the Society's Garden, Mr. Whiting of the Deepdene, and the two Messrs. Wilson, one of whom is Gardener to the Duke of Norfolk at Arundel, and the other to Lord Surrey at the Rookery near Dorking.

The regulations now in force with reference to this subject are as follows:

The men permanently employed in the garden are exclusively received on the recommendation of Fellows of the Society.

The only exception to this regulation is in favour of foreigners, of whom no more than two may be employed at the same time.

The names and addresses of the candidates for admission are entered in a book, in the order in which their recommendations are received.

Notice is then transmitted to the candidate of the points upon which he will have to give satisfactory evidence before he can be received into the garden, which are as follow :—

(1) That he has been employed for at least three years in some good garden.

(2) That he can write and spell respectably.

(3) That he is sufficiently acquainted with arithmetic to be able to keep accounts.

(4) That he is able to measure land and make simple ground plans.

In case of a permanent vacancy in any one of the departments, that vacancy is filled up by the first on the list of candidates for admission, who is received upon complying with the above regulations; but, in the case of a vacancy being temporary only, then it is filled up by an extra man, engaged by the under gardener, in whose department the vacancy occurs.

The men are successively employed in the three several departments, the transfer from one department to another taking place under the following regulations :—

(1) There are two days in each year on which the men are transferred, and no transfers are allowed to take place on other days, such transfer days being February 1 and August 1.

(2) On each transfer day a number of men, not fewer than

one-half, and as near that number as may be, are removed from one department to some other.

(3) On this occasion each under gardener selects for transfer the seniors in his department, with the privilege of retaining any one or two of them until the next transfer day, provided the men are willing to stay with him.

(4) When all the vacancies and persons to be transferred are declared, the men to be transferred have the right of choosing for themselves to which vacancy they will be appointed, the choice being given to them in the order of their seniority. The term seniority is always understood as applying to the period of employment in each department, and not in thegarden generally. But if more men apply for admission into a department than there are vacancies, in that case the transfer is arranged by consultation with the applicants

(5) On each transfer day the under gardeners make out and sign returns, declaring what the conduct of each man transferred has been during the time he was employed under them; for which purpose printed forms are issued.

(6) These returns, together with the general result of the transfer, are laid before the first Garden Committee which may meet after the transfer day. The returns are afterwards filed, and the substance of them is expressed in the certificates granted to the men under the regulations hereinafter given.

Previously to being recommended to a place as gardener, every man must pass an examination in measuring land, making ground plans, geography, the elements of botany, and vegetable physiology.

When any person employed in the garden is ready to undergo such examination, he gives notice in writing to the Vice Secretary, who appoints the time and manner in which the examination is to take place.

No person is however allowed to proceed to examination until he has passed through every department in the garden; and no

examination is held in the months of December, January, February, March, or April, without the special permission of the Committee.

The result of the examination is recorded in a book kept for the purpose; if it be satisfactory, a certificate to that effect is granted, and the person examined is entitled to be recommended to a place, provided his general conduct is approved of. The standard of qualification is placed very low by the Committee, in order to render the system of examination applicable to all capacities; but the examiner has directions to raise it in those cases in which men desire it, and the certificates are varied accordingly. Of course those persons are considered qualified for the highest places whose examinations are the most successful.

The qualification of the person examined is stated in the body of the certificate, without any distinction in the form or class of such certificate, which also expresses the substance of the several under gardeners' reports of the conduct of the man, whilst he was in their respective departments.

The examinations are verbal and private, and the result of each examination is reported to the first Garden Committee which may meet after it has taken place.

If a man does not pass his examination within three years after his admission into the garden, he is liable to be dismissed by the Garden Committee.

GEORGE BENTHAM,
Secretary.

21, Regent Street,
May 1, 1840.

XLIV. *On the Cultivation and Management of the Cactus tribe.* *By Mr.* D. Beaton, *Gardener to* Thomas Harris, *Esq. F.H.S. Kingsbury.*

Read *May* 19, 1840.

The cultivation of the Cactus tribe was almost entirely neglected in this country, till within the last ten years; if we except the *garden, or tall Cacti,* as they are now erroneously termed. The celebrated collections of the late Mr. Haworth, and of Mr. Hitchin of Norwich, are the only exceptions that I know of. It is true that a few species of Cacti have existed in the Chelsea and Kew botanic gardens, and in some other public and private gardens in this country since Miller's time; but these could not be called collections. Our continental neighbours, now so celebrated for their fine Cacti, appear to have, about as recently, become collectors as ourselves; for we find De Candolle as late as 1829, describing 162 species only, in his *Revue de la famille des Cactées,* more than one third of which were introduced into France in that year from Mexico, by Dr. Coulter. Although we can boast of having only two collections at that time, both were more rich in the number of their species than any of the continental gardens, if we are to judge of the latter from De Candolle's enumeration.

In 1833 the collection at Norwich passed into the hands of Mr. Mackie, a distinguished nurseryman of that place, from whose establishment the germ of some of our best collections of Cacti may be said to have first originated. The late Duke of Bedford bought many Cacti from Mr. Mackie in 1834, which was the commencement of the present unrivalled collection at Woburn. About the same time my employer Thomas Harris, Esq. began to admire and collect Cacti. His collection of these, and other fine plants, is now so well known, that I need not allude to it farther.

By Mr. Harris's permission I now lay before the Horticultural Society a statement of my mode of managing Cacti, with a few facts and suggestions respecting them, which may be of some use, or interesting to those amateurs, who are now beginning to make collections of these beautiful and highly interesting, though grotesque plants.

The Cacti are of all other plants the most easy to manage, and the most varied in their outward forms, and yet preserving the most striking family appearance. Some of them produce magnificent white flowers, others blossoms of the most brilliant colours; and all of them are so singularly interesting, both in or out of flower, and they occupy so little room, that I have no hesitation in recommending their extensive cultivation. Many of them are very suitable for growing as window plants, such as the Mammillariæ, and all of them are admirably adapted for amateurs whose time will not allow them to attend to plants more peculiar in their habits.

The first thing necessary for the successful cultivation of this, or indeed any extensive tribe of plants, is to have a clear knowledge of their geographical range in a state of nature: as this should determine the degree of heat suitable to their health in an artificial climate; and the next consideration is, to know their physical history in their natural localities, in order that we may be enabled to apply the powers of cultivation with certainty. It is not indeed necessary that we should strictly imitate their natural condition, but merely that we should know it, in order that our practice may be founded on nature and reason.

The grand natural emporium for Cacti is Mexico, but vast numbers of them are found in all latitudes of South America, from the north of Mexico to the southern plains of Chili. Some of the species have been met with beyond both these limits, and even in the old world; but they are not sufficiently numerous to affect the general truth of the above cursory view of their natural distribution. A few species inhabit the sea coast on both shores of the new con-

tinent; and these are more particularly met with from the mouth of the great La Plata to the Mexican gulph. Mackenzie the collector sent out by Mr. Harris and Mr. Lowe of Clapton, found Melocactus communis, M. amœnus, M. meonacanthus, Mammillaria glomerata, and some fine Cereuses and Opuntias, growing down to the water's edge in the hottest part of the globe; which, according to Humboldt, is from Cumana to La Guayra, and the Gulf of Maracaybo. Along the same coast he met with those species in abundance in open arid places; and he tells us that the plants seem to enjoy the reflection of the sun's rays from a naked soil, in addition to the scorching heat of the atmosphere. From this region of excessive and perpetual heat, up to the limits of perpetual snow, or nearly so, some species of Cactus or Opuntia are to be met with, at every degree of elevation. In the latitudes of the periodical rains, the Cacti are deluged for three, four, or five months at a time, while they are completely dry for the rest of the year. They may be said to enjoy a perpetual spring in some localities, such as, for example, in the vallies of the "tierra templada" in Mexico, or in the higher vallies of New Grenada, and in the neighbourhood of Quito, and other places of similar temperature; and I believe a few Cereuses are found in that part of the Peruvian coast where rain is unknown. We have some seedlings here, received from the Hon. and Rev. W. Herbert, and raised from seeds gathered by Mr. Pentland on the Andes of Cusco 13° S. lat. at an elevation of nearly 15,000 feet, where the mean temperature is 46°, also from the Andes of Bolivia, altitude 14,600 feet; and still farther south in lat. 19° we have from the same source Cacti from a mean temperature of 45°.

From this hurried glance at the physical history of the Cacti, and comparing them with other genera of equal, or even a less geographical range, we might *a priori* be led to think it impossible to grow all these plants in one house with any degree of success; yet such is frequently the case. It is true that the Alpine Mam-

millariæ and Opuntiæ do not succeed so well if kept in the same temperature as the great number of Cacti; these Alpines should receive the treatment of the heath-house all the year round. On the other hand the Melocacti, which inhabit the intratropical shores, require a higher temperature than the rest of the family; the mean temperature of 55° is necessary for them, even in winter; but if they are kept perfectly dry from October to March they will live in a much lower degree. These are the two extremes of habit among the Cacti growing in this country. The great mass of the species will do perfectly well in an intermediate temperature, say from 45° to 50° if they are kept near the glass. The only attention they require for three or four months in winter, under this temperature, is to receive plenty of air when the weather permits. If they are kept warmer than this in winter their growth is not quite suspended, and they will require to be occasionally watered.

Newly imported Cacti, if received after the first of September should not be potted, or otherwise excited into growth until March. Many of the Mammillariæ with short thick succulent roots, most of the Echinocacti, and all the Melocacti, are slow in making their new roots after their first arrival, these therefore, should be assisted with a gentle bottom heat to encourage them in forming their new roots. Indeed all the Cacti are much benefited by a little bottom heat on their first arrival, and even at all times when they are in a growing state, if we could so far indulge them. No plants seem to enjoy bottom heat more than the Cacti: even the species from the limits of perpetual snow like this indulgence, although the heat of a close house or frame would soon injure them, by exhausting their vital energies. To recommend bottom heat for plants that will live out of doors with us for the greatest part of the year, is a novel feature in garden literature, and was first recommended about three years since, by the Hon. and Rev. W. Herbert, in his work on the *Amaryllidaceæ*, p. 402. The good effects of this system we have proved here with other plants as well as with Cacti.

Mr. Harris, wishing to ascertain how far Mr. Herbert's recommendation of summer bottom heat was applicable to the culture of such plants, ordered a glass-case, in which our Auriculas are wintered, to be placed over a bed of hot dung. On the top of the dung we put a layer of rough stones and gravel, and three or four inches deep of light compost was placed over the whole. In this we planted upwards of a hundred Cacti of different species. The case was well suited for the object Mr. Harris had in view; as it had moveable sashes at the sides and at both ends, with a span roof of glass, and by removing the side and end lights, the plants were as much exposed to the currents of the air, as if they had been planted out in the open border. The plants for this experiment were mostly newly imported ones, and for the first month after planting them the case was kept quite close, after that, the side and end lights were opened, and a constant draught of air was admitted day and night; the plants were syringed every evening in hot weather. After four months' treatment in this way the result was completely successful. Some of the Mexican Mammillariæ had made roots ten inches long in that time; and contrary to their natural habits in some cases, their roots crept along close to the surface of the soil. The roots of most Cacti penetrate far into the soil and insinuate themselves into the crevices of stones and rocks, in quest of moisture, but in this instance they kept near the surface where the moisture was supplied; a curious instance of the capability of plants to accommodate themselves to particular circumstances.

We have also grown Cacti in constant bottom heat for the last three years with uniform success, especially our seedlings, of which we possess many thousands. This has been effected by a simple contrivance which can be imitated in any house heated either with flues or pipes. It is this,—a shelf of thin Welch slate runs along the whole front of the Cactus house, one side of which rests between two courses of bricks in the front wall, the other on

a piece of deal quartering, which is supported by a row of wooden posts. The hot-water pipes run along under this shelf, and keep the slate constantly hot. An inch of rough cinders is placed on the shelf, and a row of inverted pots (small sixties) is placed along the front of the shelf on the cinders, at about five or six feet apart. About three inches of light compost is placed over the cinders with a sprinkling of sand on the top to preserve a neat appearance. A deal board is placed along the side of the bed to keep in the soil; and when the whole is planted and finished, the bottoms of the inverted pots are on a level with the surface of the bed. Water is occasionally poured down through these inverted pots to irrigate the soil, and to prevent the heat from drying it too much. The shelf being uniformly level, the water runs equally under the soil among the cinders; and in the midst of the growing season the whole bed is saturated by this simple means, in imitation of the natural condition of the plants during the rainy season. Besides the seedlings, we plant out the more tender species in this bed to get them established; we also in this bed propagate some of the more delicate sorts from cuttings, and we often sow the seeds in it and leave them to their fate.

By a proper system of bottom heat,* Cacti might be grown in frames in this country to great advantage; and if turned out of the pots, and planted in soil over a heated mass of brick-bats and stones, they would live in the frame during winter with safety, if a mat or two were thrown over the glass in severe frosty weather. By planting seedlings and young offsets in this manner within a few inches of the glass, and thinning them from time to time as they become crowded, we might soon equal, if not excel our continental neighbours; who, though they also grow their Cacti in

* The best, most simple, and most practical mode of supplying bottom heat by means of hot-water, is that detailed by J. Rogers, Esq., F.H.S., of Seven Oaks, Kent, in the Gardener's Magazine, Vol. XVI. p. 139.

frames in summer, are obliged to take them up in the autumn to preserve them from the severity of their winters, which must give their plants an unnatural periodical check. To those fond of green, healthy and symmetrical Cacti, seedlings and offsets are far preferable to imported plants, as we seldom receive the latter without some of their bottom spines being dead, or yellow spots, or being thus discoloured in some measure by time or circumstances. This is more particularly the case with the Mammillariæ and Melocacti, kinds which often grow among grass and low herbage that disfigures them, and which it is the most desirable to have of a healthy appearance and fine shape.

The soil in which Cacti grow in their natural state, is as various as the climates they inhabit. Some grow in stiff yellow clay mixed with rough gravel, and some in fine strong loams of different textures and colours: others are found in all the kinds of light soil, in peat, and among chalk and lime-stone, and others on the sterile lava of volcanic districts. I have tried many kinds of soils and composts for these plants with almost equal success, and I have some which have been growing in pure sand for the last eighteen months, and which look just as well as others of the same species which have been growing in a well prepared compost. The stronger Cerei and Opuntiæ like the same compost as the pine apple, and our common, or tall Cacti, are brought to their greatest perfection in the richest composts; yet for the general bulk of the family I lay no stress on the kind of compost which should be used for them; any rich friable soil without vegetable, or animal manures, will suit them quite well. For the large specimens of Melocacti and Mammillariæ, and those for which I am obliged to use disproportionately large pots, owing to their shape, I use half loam and the other half equal portions of sand and brick-dust, or broken pots pounded small; and for the smaller specimens I use the old proportions of loam, peat and sand with a portion of brick-dust. Large plants will not require shifting for many

years, and it is for this reason that I reject the proportion of peat for them, as being of a vegetable nature it is liable sooner than loam to get soddened by the falling of drops, or any imperfection in the drainage; but this objection is of little consideration for the smaller plants, which may be shifted at all times with safety. For the very succulent and delicate species, I use one third loam, the rest equal portions of sand and pounded "crocks," with the pots half filled with drainage. The general health of a collection of Cacti depends more on a proper system of drainage than on the kind of compost used. Although we use rough pounded crocks in the soil for the use of the roots, and for keeping it in a free open state, we cannot use such very porous materials as crocks for drainage with impunity; as the delicate fibres of the Cacti delight to insinuate themselves among the drainage, and if this drainage were of a soft porous nature, its dampness would soon destroy them in winter. In a general way rough coal cinders will do well for drainage; but for particular favourites, equal quantities of pounded oyster-shells and coal clinkers is by far the best drainage that can be used, keeping the finer parts towards the top, to prevent the soil from mixing with the drainage. A layer of moss placed on the drainage for the same purpose, as is done for other plants with advantage, would soon kill the finer sorts of Cacti, and must never be used for them. When I shift these plants I shake off all the old soil from their roots; which is easily done by letting the plant get quite dry before shifting, so that the soil may crumble away by its own weight; hence the utility of the soil being of an open texture. I then place the roots carefully in the fresh pot and shake the soil gently in among them. The usual mode of watering fresh potted plants, I reverse in this case, and withhold water for several days after potting; in order to let any roots, which may have been broken, have time to dry up, otherwise if moisture were applied to fresh wounds, death might soon be the consequence. Before I adopted this system I lost many valuable plants by watering them

at this improper time, merely because it is customary to do so with other plants.

If you let a young soft seedling Cactus get so dry that it begins to shrivel, and then cut off the point of the tap root and place it in a coloured liquid, it will soon imbibe the liquid; and if you afterwards cut it lengthways through the centre you will see the beautiful system by which it receives its nourishment, forcibly displayed by the coloured veins or vessels in the fleshy pulp; some of these vessels are so small that you could hardly touch them with the point of a needle, yet if one of them should be broken or otherwise deranged, it might soon lead to the destruction of the whole plant. Many who admire the outward forms of these singular plants, know little of the extreme delicacy of their internal structure, and handle them as if their veins were formed of iron. Even after a collector has been instructed not to twist or pull any of these plants out of the earth by mere force, for fear of injuring their internal structure, he will often, though he may dig up the plants with the greatest care, take hold of the long wiry roots to carry away the plants by them; and if the specimen should be at all heavy, its whole weight is thus suspended on a series of the most delicate vessels, which can scarcely escape being torn asunder, and if they are, the dissolution of the plant will inevitably follow, though it may appear to live for some time after.

There is a direct communication from the roots up through the centre of all Cacti by means of a series of perpendicular woody fibres, which are soft in young plants and at all times in the very succulent kinds, but which generally in mature plants assume a firm woody character, and in many species of Cereus and Opuntia become quite ligneous, with a pulpy centre analogous to the pith of trees and shrubs. These woody fibres may be traced up to the last two years' wood where they merge into the general succulency

of the plant. The moisture imbibed by the roots rises through these woody channels, and hence is distributed through the succulent mass, from the whole surface of the central axis, by means of the system of reticulated fibres or veins already alluded to. We can thus perceive how easy it is to injure these plants in taking them up, or in carrying them, or handling them roughly afterwards.

In growing Cacti from seeds I fill the pots with cinders to within two inches of the top; and fill them up with very sandy peat, with a little clean sand on the top. The pots are then watered and the seeds sown on the wet sand; and as much dry sand is sprinkled over them as will just fill up the spaces between them. The whole is then pressed down gently, and the pots are put by in any warm place, where they are kept moist. The seeds will vegetate in ten or twelve days and must then be very gently watered for fear of displacing them till they make their little roots, and get firm hold of the soil, after which, they may be freely and regularly watered. I have transplanted these seedling Cacti at all ages, but after all the care I could bestow upon them, I lost so many of them by transplanting while yet very young that I would recommend amateurs to sow the seeds quite thin in the first instance, and not to transplant them till they begin to get crowded in the pots, in a year or two. They cannot be grown so fast in this, as in the other way, but it is the surest method to be adopted with scarce and delicate kinds.

The seeds are produced I believe on all Cacti on the last year's wood like the peach; and nothing is easier for a collector than to procure seeds of all the species of Cacti he meets with in their native wilds. It is not at all necessary that these like other seeds should be ripe at the time of gathering them; if they are merely going out of flower the tops of the plants may be cut off, and the succulency of the amputated part will provide sufficient nourish-

ment for ripening the seeds. Such pieces may be dried, and sent home loaded with immature seeds, which will ripen on the passage, or soon after being stimulated into growth in this country.

Cutting off three or four feet from the top of the immense pillars of tree Cereuses in this way, whether in seed or not, is indeed the only way by which we can ever expect to flower them in this country. Hitherto we have been satisfied if we could procure seeds or pieces of young plants of these columnar Cacti; as although we can grow them to a large size, we have not sufficient sun to elaborate their juices sufficiently to bring them to a flowering state. Amputation of the top would be the best method to pursue with all the Cerei and Opuntiæ, and the easiest for the collector; let him fix on the oldest plant of each kind, cut it down and preserve the head, or top piece; and after drying the wound, let him send it home in saw dust, or any dry hard grass, but by no means in moss, which is of all others the worst to transmit plants in, as it imbibes and retains moisture. Besides gaining thus all the true or natural characteristics of the plants, we should have every chance of seeing their flowers soon after their arrival, and thus be in possession of a great acquisition to our collections, which we can never expect by our present mode of procuring young plants.

After forming a collection of Cacti the next inquiry will be, can we improve their races by hybridizing as is done with other genera? The Mammillariæ being grown entirely for their forms and not for their flowers, and being so numerous already, little farther improvement need be wished among them; but if we could get that section of them which bears Echinocacti flowers, such as M. pycnacantha, to cross with some of the true Echinocacti, we might expect new anomalous forms. Echino- and Melo-cacti will no doubt interbreed, but nothing desirable can be anticipated from their union. The tube, or Cereus flowering Echinocacti, will not cross with the true Cerei, at least I have failed in producing such a cross, but further trials should be made. I have repeatedly

effected abortive fecundation with these, by dusting the Cereuses and Epiphylla with the pollen of Echinocactus Ottonis ; but though the seed vessels would ripen seeds to all appearance quite perfect, the seed wanted the embryo. This is a common occurrence in extensive families. The Cerei, of which the Epiphylla are a subsection, are the great laboratory for improving the fine flowering Cacti. Much has already been effected by crossing these plants, and much more remains yet to be accomplished among them in this way. To say nothing of mixing new species with the older ones for the sake of brilliant colours, we might easily get a new race of free flowering ones in the way of Cereus grandiflorus, by a judicious mixture of such species as Cereus nycticallis, C. triangularis and its near relative C. Napoleonis, with that splendid new Cereus which is sold in the London nurseries under the erroneous name of *setaceus*, but which has no resemblance to the true setaceus of Prince Salm Dyck, farther than being, like it, three angled. This noble Cereus is not described by Dr. Pfeiffer, and I think it has been only introduced to some collection in this country and not yet described ; however, it is the finest of the genus, and by it a new race of splendid Cacti may be obtained ; its flowers are as large as those of C. grandiflorus, and of a brilliant yellow colour, of the African marygold tint. This Cereus, and C. nycticallis which is the freest and perhaps the largest flowering sort we have, ought to be in every collection. This yellow flowering cereus could effect wonders with the C. speciosissimus and its seedlings, and produce a new race having all the brilliancy and tints of the Azalea.

XLV. *Upon the advantages of Root Pruning in Pear Trees.* *By Mr.* Thomas Rivers, *Jun., Nurseryman, Sawbridgeworth.*

Read April 7, 1840.

It is now about ten years since, in consequence of being much inconvenienced by the confusion in the names of new pears, I felt myself called upon to plant specimen trees of all the varieties I then possessed. But fearing that much ground would be wasted in the experiment, I kept my mind on the alert to arrest superabundant growth and induce early fruitfulness; this I then thought could be best done by planting the trees in small square brick pits, leaving holes at the bottom for drainage. Plunging trees in large pots also occurred to me; but as I soon found these methods too expensive, I took advantage of a piece of shallow loamy soil resting on a substratum of very hard white clay, to carry out my ideas, for I calculated that the roots of the trees would not penetrate the clay, and that the soil on the surface might be made rich enough to support the trees without vigorous and unruly growth. However I soon found that the roots of trees are not so easily kept within bounds, and that those of my Pear Trees, in search of nutriment, not being able to enter the hard clay, were wandering far and wide, the branches also keeping pace with the roots, and growing much too rapidly for my calculations as to the space each tree ought to have occupied. I had previously remarked for many years that Apple Trees growing in a firm loamy soil in this nursery, if removed one or two years consecutively, which in nursery culture often occurs, acquired a stunted and prolific habit, making abundance of bloom buds and bearing profusely. On examining these

trees I found they had no large feeding roots but only a mass of fibres. I also found that if such trees were by accident planted near, or in, rich soil, comparatively large feeding roots were formed; they commenced growing with vigour, and their fruit bearing propensities were proportionately diminished, their tufty fibrous roots gradually disappearing. I mention this without endeavouring to draw any conclusions from it, as it is intended simply to state the progress of my ideas. It then occurred to me that if I could keep the roots of my Pear Trees in the same state by frequent removals, I should make them acquire the stunted and prolific habit I had so long observed in Apples.*

In attempting to remove my Pear Trees, a second thought occurred, that it would be less trouble to dig a trench round them and cut all their roots at a certain distance from the stem, and this completely fulfilled my anticipations. I have pruned radically for five seasons, and with the most satisfactory result.

Shoots of the Autumn Bon Chretien of last season's growth were only three to four inches long, the root having been pruned December 1838. A tree in this state should have one or even two years' rest, that is its roots should not be again pruned till it makes shoots six to eight inches long in one season.

The Passe Madeleine (fig. A.) whose roots were pruned in December 1838 has made no shoots, but is covered with blossom buds.

In the Vallée franche (fig. B.) the maximum of last year's shoots was four inches; this tree was arrested by root pruning in December 1838, and is now covered with blossom buds.

* I think I may say that I knew a small and neglected quarter of Apple Trees, in my younger days, that were six or eight years stationary as regards growth, but perfectly healthy and bearing every year profusely, the soil a stiff loam.

The Autumn Bergamot is well known to have supported the Herefordshire distich,

" He who plants pears,
Plants for his heirs."

With root pruning it seems inclined to be as prolific as the new

varieties. I may here mention that a Gansel's Bergamot being pruned rather too harshly in December 1838, bloomed most profusely last spring and died in the summer.

In the Winter Nelis (fig. C.) the last season's growth was three inches; the tree is now covered with blossom buds.

In all these cases the shoots are in a state of perfection as regards prospective fruitfulness.

It now only remains for me to give some hints and directions as to the mode of operation. The best description of trees for what I may perhaps be allowed to call Garden Orchards, are half standards with round well formed heads, the same trained en quenouille, and dwarfs in the usual bush fashion. For immediate effect these should be prepared by annual root pruning for one, two, or three years in the nursery, but if not so prepared, trees of the usual size and quality may be planted and suffered to remain two years undisturbed, unless the soil is rich and they make vigorous shoots the first season after planting (operations may then commence the first season); thus, supposing a tree to be planted in November or December, it may remain untouched two years from that period, and then, early in November, if possible, a circumferential trench ten inches from the stem of the tree and eighteen inches deep should be dug, and every root cut with a sharp spade, which should be introduced quite under the stem at about fifteen inches in depth, so as completely to intercept every perpendicular root. The treddle spade used in this part of Hertfordshire is a very eligible implement for this purpose, as the edge is steeled and very sharp. The following year, the third from planting, a trench may again be opened at fourteen inches from the stem so as not to injure the fibrous roots of the preceding summer's growth, and the spade again used to cut all the circumferential and perpendicular roots that are getting out of bounds, the fourth year the same operation may be repeated at eighteen inches from the stem and in all subsequent root pruning this distance from the stem must be kept;

this will leave enough undisturbed earth round each tree to sustain as much fruit as ought to grow, for the object is to obtain a small, prolific tree. I assume that in the course of years a perfect ball of fibrous roots will be formed, which will only require the occasional operation of a trench being dug and this ball of earth pared down to ascertain whether any large feeders are making their escape from it. But it must be borne in mind that this circular mass of soil will in a few years be exhausted, to remedy which, I have had left round each tree a slight depression in the soil, or in other words, the trench has not been quite filled in, this circular furrow I have filled with fresh night soil, and this has had a most excellent effect; any other liquid manure would undoubtedly be equally efficacious, but my soil was poor and I thought it required strong manure. As it did not come in contact with the roots no injury resulted from using such a powerful raw manure; there is perhaps no absolute necessity for liquid manuring, as common dung may be laid round each tree in the Autumn, and suffered to be washed in by the rains of winter and drawn in by the worms. In mentioning liquid manure I give the result of my own practice; the great end to attain seems, to use an agricultural phrase, to be able "to feed at home," that is to give the mass of spongioles enough nutriment in a small space, but not too much, so that a tree will make shoots about four inches long in one season, (for such I conceive ought to be the maximum of growth) and at the same time be able to produce abundance of blossom buds and fruit*; on trees of many varieties of pears the former will be in too great abundance. I think removing a portion in early spring would be an improvement

* In describing the Autumn Bon Chretien I referred to the necessity of an occasional cessation from root pruning. I may here repeat that while a tree makes but four inches of annual growth or less, its roots may remain untouched, as it then is or ought to be in a prolific state; but if it shows too much vigour, by making shoots in one summer six or eight inches in length, the following November its roots must be regularly operated upon.

in pear culture. I have not mentioned the necessity of pruning the branches of pear trees thus brought into early fruitfulness ; all that is necessary is the occasional removal of a crowded branch, the fact being that root pruning almost does away with the necessity of branch pruning. Sometimes however a root will escape the spade, and then in the following summer a vigorous shoot or two will make their appearance ; these should be shortened in August to within four buds of their base, and the following Autumn the feeding root must be diligently searched for.

I send a specimen (fig. D.) of shoots of this kind, the result of a root being left unpruned.

To prune roots with a spade may be thought a rough and ungardenlike operation, but to use a knife would be tedious. In defence of spade pruning I can only say that it seems to answer perfectly with my trees, and experience is generally a tolerable guide.

I have also practised root pruning on apple trees for two years, and have reason to hope for perfect success. Some trees have been arrested in a most extraordinary state of vigorous growth, making shoots from four to five feet in one season, they having been planted about five years. From plums and cherries I have reason to hope for the same results.

I have not mentioned the possibility of root pruning fruit trees of twenty or thirty years growth with advantage. Irregular amputation of the roots of fruit trees, too vigorous, is I am aware, an old practice, but the regular and annual or biennial pruning of them, so as to keep a tree full of youth and vigour in a stationary and prolific state, has not that I am aware of been recommended by any known author, although it may have been practised. In urging its applicability to trees of twenty or thirty years growth, I must recommend caution ; the circular trench should not be nearer the stem than three feet, and only two thirds of the roots should be removed the first season, leaving one third as supports to the tree, so that it is not blown on one side by the wind ; and these

of course must be left where they will best give this support. But if, as is often the case in pears, the roots are nearly all perpendicular, the tree must be supported with stakes. The second year half these remaining roots may be cut, or if the tree is inclined to be vigorous, all of them, but if it gives symptoms of being checked in its growth too much they may on the contrary all remain undisturbed for one or even two seasons.

I may perhaps be allowed to conclude this too long paper by stating that as the end of all gardening operations ought to be to give much in little space, root pruning of trees carried on systematically and regularly, seems to approach that desirable object, and I cannot help flattering myself that, by its means, complete collections of pears and other fruits may be grown advantageously, in comparatively small gardens.

XLVI. *A note on Chorozema varium; a new Greenhouse Shrub from Swan River, with a plate.* *By Professor* LINDLEY.

AMONG the multitude of papilionaceous shrubs inhabiting New Holland there is so great a uniformity of appearance that a very few species only are favourites in cultivation. That which is now represented is however a striking exception to the general rule, for the colours of its flowers are lively and varied, its foliage is of a deep rich green tint, and it forms a compact bush, which has no disposition to become naked, or drawn up, if managed with ordinary skill.

It is a native of the Swan River Colony, was raised in the Society's Garden in 1837, from seeds presented by Mr. SMART, under the name of a native pea, and in the following year produced a single flower about the end of the summer. Since that period the seedlings have become vigorous and have blossomed most abundantly, both in the Society's Garden and elsewhere.

There appear to be several varieties already, and it is not improbable that this plant may have such a tendency to departure from its wild form as to lend itself freely to the arts of amelioration, in regard to the size and colour of the flowers, as well as that of the foliage. On the accompanying plate two such varieties are represented; of which that on the right has the leaves constantly destitute of the spiny wavy margin present upon the majority of individuals that have been raised, and that on the left has larger and brighter flowers than usual. It has not however been thought necessary to give them separate names.

It grows well in pots or in the border of the conservatory, strikes freely from cuttings, and is readily preserved during winter if protected from damp, which proves fatal to so many New Holland

Viola tricolor varium.

Plants. It produces a long succession of flowers in the early months of spring.

The accompanying figure has been made by Miss Drake from specimens in the Society's Garden.

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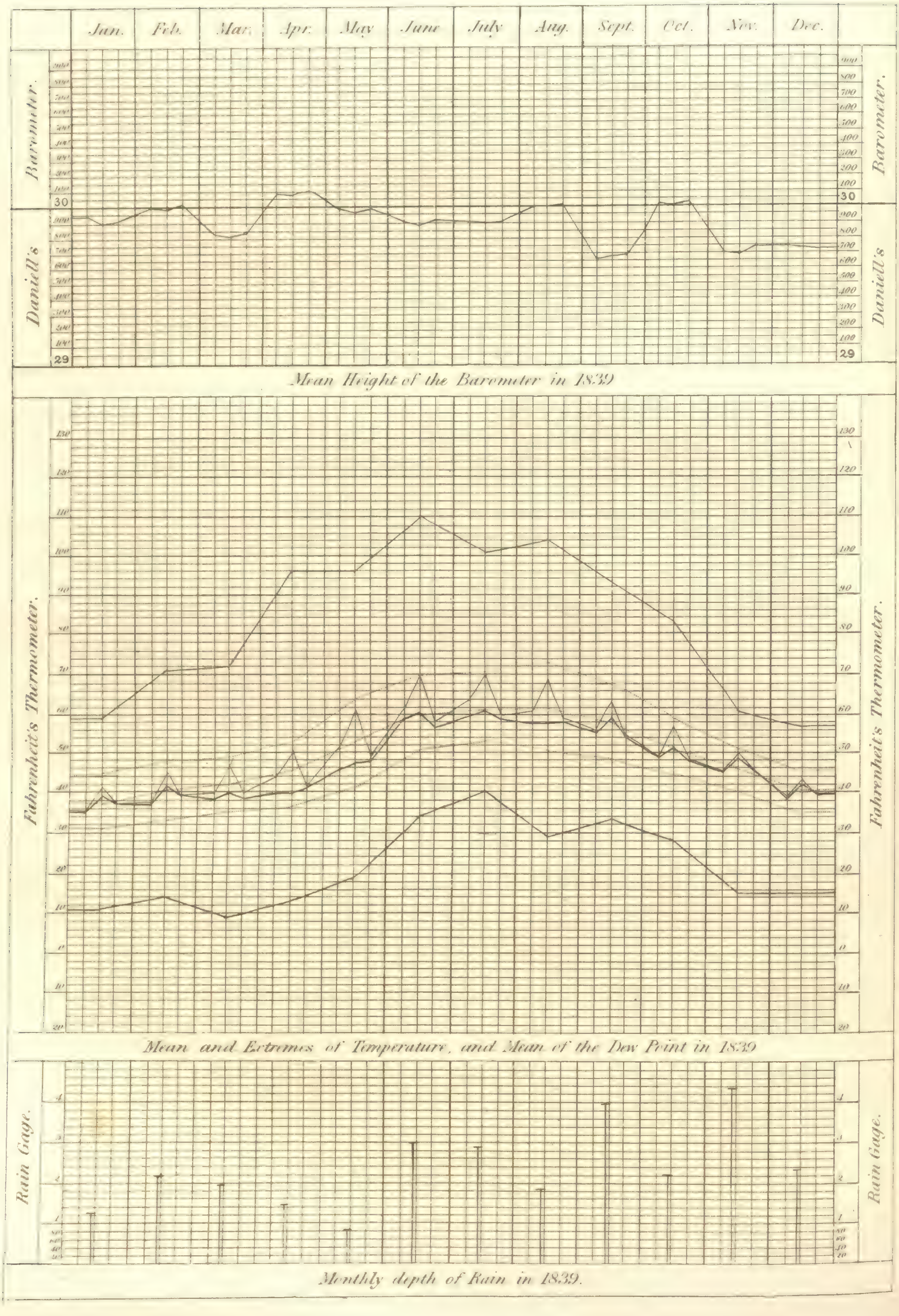

Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Barometer.
Daniell's
Mean Height of the Barometer in 1839
Fahrenheit's Thermometer.
Mean and Extremes of Temperature, and Mean of the Dew Point in 1839
Rain Gage.
Monthly depth of Rain in 1839.

XLVII. *Journal of Meteorological Observations made in the Garden of the Horticultural Society at Chiswick during the year* 1839. *By Mr.* Robert Thompson.

This Journal has been kept on the same plan as the preceding.

JANUARY.

		Morning.					Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
T.	1	30.391	39	39	—	Overcast	30.288	44	44	—	Slight Rain	30.081	48	48	—	Overcast
W.	2	—.074	43	41	2	Fine	—.076	43	35	8	Cloudy	—.102	44	44	—	Ditto & Fine
Th.	3	29.958	44	42	2	Ditto	29.898	47	47	—	Ditto	29.672	46	46	—	Ditto
F.	4	—.560	41	41	—	Rain	—.548	45	45	—	Clearing	—.773	32	32	—	Very Clear
S.	5	—.708	34	34	—	Clear	—.641	43	43	—	Very Fine	—.795	33	33	—	Ditto
S.	6	—.735	34	34	—	Overcast	—.661	36	36	—	Sleet	—.147	47	47	—	Rain
☽ M.	7	—.096	42	42	—	Boisterous	—.102	45	43	2	Boisterous	—.343	38	38	—	Boisterous
T.	8	—.592	32	32	—	Clear	—.588	36	36	—	Snowing	—.526	36	36	—	Clear
W.	9	—.735	32	32	—	Frosty	—.868	35	25	10	Clear	30.210	24	24	—	Sharp frost
Th.	10	30.304	27	27	—	Ditto	30.261	40	40	—	Ditto & Fine	—.250	40	40	—	Overcast
F.	11	—.181	41	41	—	Overcast	—.138	44	44	—	Rain	—.130	50	50	—	Ditto
S.	12	—.217	45	45	—	Cloudy	—.232	48	45	3	Very Fine	—.202	39	39	—	Ditto
S.	13	—.049	50	50	—	Ditto & Windy	—.004	50	50	—	Slight Showers	29.994	48	48	—	Clear
M.	14	29.970	43	43	—	Fine	29.888	46	46	—	Rain	—.781	39	39	—	Cloudy
● T.	15	—.850	35	33	2	Very Clear	—.831	45	45	—	Clear	30.033	36	36	—	Clear
W.	16	—.969	33	33	—	Slight Snow shower	—.951	38	32	6	Fine but Cold	— 024	30	30	—	Frosty
Th.	17	30.046	27	27	—	Sharp Frost	30.045	35	29	6	Ditto	—.170	30	30	—	Ditto
F.	18	—.204	24	24	—	Ditto	—.189	35	29	6	Ditto & Clear	—.074	35	35	—	Overcast
S.	19	29.639	43	43	—	Cloudy & Windy	29.392	48	48	—	Stormy & Wet	29.949	32	32	—	Clear
S.	20	30.038	36	34	2	Fine	30.018	50	50	—	Rain	—.729	39	39	—	Rain
M.	21	29.696	48	48	—	Rain	29.677	50	50	—	Drizzly	—.877	39	39	—	Ditto
☾ T.	22	30.112	32	32	—	Very Clear	30.187	38	35	3	Clear and Cold	30.445	32	30	2	Clear
W.	23	—.551	35	32	3	Overcast	—.520	40	38	2	Fine	—.494	36	36	—	Overcast
Th.	24	—.573	32	32	—	Hazy	—.494	43	41	2	Ditto	—.308	40	40	—	Fine
F.	25	—.108	43	43	—	Fine	—.033	45	39	6	Ditto	29.989	41	41	—	Ditto
S.	26	—.178	34	34	—	Ditto	—.217	37	35	2	Cloudy	30.388	32	32	—	Slight Snow
S.	27	—.374	32	27	5	Cloudy	—.343	34	29	5	Ditto	—.246	32	32	—	Overcast
M.	28	—.064	30	30	—	Frosty	—.048	36	32	4	Ditto & Cold	29.682	31	31	—	Slight Snow
○ T.	29	29.591	31	30	1	Clear	29.338	37	37	—	Fine	—.155	32	32	—	Snowing
W.	30	—.284	20	14	6	Ditto & Sharp Frost	—.218	32	21	11	Slightly Overcast	—.039	30	30	—	Stormy with Snow
Th.	31	—.224	32	32	—	Snowing	—.141	32	32	—	Snowing	—.729	30	30	—	Snowing
		29.938	35.93	35.19	0.74		29.898	41.19	38.74	2.45		29 914	36.80	36.74	0.06	

JANUARY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	50	43	50	50	W	Brisk		The mean pressure, temperature, and amount of rain in this month differed but little from the average. There was a slight frost on the morning of the 6th, sleet and snow in the course of the day; the wind shifting from SE. to S., SW. and W. in the evening, increased to a most violent hurricane about 10 P. M.; it raged with great fury during the night, occasioning considerable damage; it however effected much greater devastation in part of Ireland, and in the west and north of England where thousands of forest trees were torn up, some of which had withstood the storms of centuries. The wind continued to blow strongly from W. during the two following days. The 19th was stormy and wet, and the 30th was tempestuous, with snow.
2	49	42	52	38	——	Ditto		
3	49	40	52	39	SW	Ditto	.04	
4	47	31	52	25	W	Ditto	.01	
5	44	32	52	26	SW	Little		
6	53	32	53	31	SE SW W	Hurricane	.33	
7	47	32	53	29	W	Strong	.10	
8	35	31	53	26	——	Ditto		
9	36	21	45	14	NW	Little		
10	44	31	53	30	S	Ditto		
11	50	42	50	41	SW	Brisk	.06	
12	51	39	59	34	W	Little		
13	52	41	59	35	——	Brisk	.01	
14	46	34	46	29	——	Little	.09	
15	44	31	51	26	NW	Strong		
16	41	26	52	20	——	Brisk		
17	38	23	53	15	——	Ditto		
18	44	27	50	22	——	Little		
19	50	29	50	25	SW	Strong	.13	
20	51	39	51	35	——	Little	.16	
21	50	32	50	28	W	Ditto	.34	
22	37	33	48	28	N	Brisk		
23	42	30	55	24	NW	Little		
24	48	37	58	32	——	Ditto		
25	49	32	52	27	——	Strong		
26	38	30	41	26	NE	Brisk		
27	35	26	38	18	——	Ditto		
28	36	29	41	22	——	Little		
29	39	17	45	11	NW	Strong		
30	34	27	38	24	——	Little		
31	37	22	45	15	W	Ditto		
	44.06	31.64	49.90	27.26			1.27	

Mean Pressure from the 3 daily observations 29.916 inches
—— Temperature ..... Ditto ..... 37°.97
—— Dew Point ..... Ditto ..... 36°.89
—— Degree of Dryness ... Ditto ..... 1°.08
—— Degree of Moisture .. Ditto ..... .962
—— Force of Vapour .... Ditto ..... .253 inch.
Least observed degree of Moisture ..... .676
Maximum Temperature in the Shade .... 53°.
Minimum Temperature in ditto ..... −17°.
Maximum Temperature in the Sun ..... 59°.
Minimum of Terrestrial Radiation ..... −11°.
Mean Temperature of external Air ..... 37°.85

WINDS.

North	1 day.	N. East	3 days.
South	1 ..	S. East	1 ..
East	0 ..	N. West	10 ..
West	10 ..	S. West	5 ..

31 days.

Amount of Rain ..... 1.27 inch.

FEBRUARY.

		Morning.					Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
F.	1	30.074	28	25	3	Overcast	30.067	33	30	3	Fine	30.121	31	31	—	Frosty
S.	2	—.101	25	21	4	Sharp Frost	—.113	35	29	6	Clear	—.130	32	32	—	Overcast
S.	3	29.910	36	36	—	Thawing	29.894	40	40	—	Thawing	29.875	31	31	—	Hazy
M.	4	—.853	35	35	—	Fine	—.850	45	45	—	Cloudy	—.866	48	48	—	Overcast
T.	5	30.104	36	36	—	Ditto	30.163	46	46	—	Hazy	—.974	42	42	—	Heavy Rain
☾ W.	6	—.119	41	41	—	Hazy	—.191	45	45	—	Foggy	30.232	43	43	—	Hazy
Th.	7	—.298	48	48	—	Drizzly	—.303	52	52	—	Drizzly	—.336	49	49	—	Overcast
F.	8	—.373	48	48	—	Hazy	—.354	52	52	—	Hazy	—.304	51	51	—	Cloudy & Windy
S.	9	—.336	51	51	—	Overcast	—.327	53	53	—	Overcast	—.351	50	50	—	Drizzly
S.	10	—.280	40	40	—	Fine	—.486	48	48	—	Very Fine	—.559	34	34	—	Clear
M.	11	—.485	34	34	—	Dense fog	—.432	46	46	—	Hazy & damp	—.371	42	42	—	Ditto
T.	12	—326	44	43	1	Fine	—.292	47	46	1	Overcast	—.261	46	46	—	Rain
W.	13	—.585	33	33	—	Clear	—.504	46	46	—	Fine	—.315	38	38	—	Slightly Overcast
● Th.	14	29.934	48	48	—	Boisterous	29.940	52	46	6	Boisterous	—.083	36	36	—	Clear
F.	15	30.109	32	32	—	Clear	30.099	47	41	6	Fine	29.873	46	46	—	Overcast
S.	16	29.533	41	41	—	Stormy & wet	29.554	45	32	13	Ditto	—.537	32	30	2	Clear
S.	17	—.504	32	32	—	Clear	—.467	44	36	8	Ditto	—.473	32	32	—	Snowing
M.	18	—.474	33	33	—	Snowing	—.533	36	36	—	Sleet	—.686	30	30	—	Clear
T.	19	—.639	25	25	—	Sharp frost	—.553	39	36	3	Fine	—.452	38	37	1	Overcast
☽ W.	20	—.394	37	36	1	Cloudy & cold	—.420	38	37	1	Bleak & Cold	—.944	36	36	—	Windy
Th.	21	30.222	34	26	8	Ditto	30.274	39	26	13	Dry haze	30.214	34	34	—	Densely Overcast
F.	22	29.875	41	41	—	Hazy	29.873	49	49	—	Cloudy	29.728	49	49	—	Rain
S.	23	—.559	49	49	—	Rain	—.656	51	45	6	Very Fine	—.822	36	36	—	Clear
S.	24	—.828	38	38	—	Very Clear	—.796	45	37	8	Ditto	—.657	36	36	—	Fine
M.	25	—.682	36	36	—	Ditto	—.716	44	44	—	Showery	—.961	36	36	—	Ditto
T.	26	30.050	32	31	1	Do. & Frosty	30.052	42	30	12	Fine	—.966	36	36	—	Ditto
W.	27	29.901	37	37	—	Fine	29.863	46	46	—	Showery	30.000	36	35	1	Ditto
○ Th.	28	30.175	35	34	1	Clear	30.196	47	38	9	Very Fine	—.159	40	40	—	Ditto
		29.990	37.46	36.78	0.68		29.998	44.71	41.40	3.31		30.009	38.92	38.78	0.14	

FEBRUARY.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	36	20	47	14	N	Little		The mean temperature was about the average. The quantity of rain was nearly $\frac{1}{3}$ more than usual, yet the Barometer, stood above the mean; it is also remarkable that between the 7th and 13th the Barometer stood very high, notwithstanding the prevalence of SW. winds at the time, the almost invariable tendency of these being to lower the state of the mercury very much. The 14th was very boisterous, as were also the nights of the 15th and 20th.
2	41	29	54	28	NW	Ditto		
3	45	29	48	25	SW	Ditto	.42	
4	49	33	50	29	S	Brisk	.12	
5	46	36	51	22	——	Little	.39	
6	50	42	51	42	SE	Ditto		
7	53	48	55	47	SW	Ditto	.01	
8	53	49	53	47	——	Brisk		
9	53	39	55	32	——	Ditto	.06	
10	53	28	71	23	NE	Little		Mean Pressure from the 3 daily observations 29.999 inches.
11	49	41	49	39	SW	Ditto		—— Temperature ..... Ditto ..... 40°.36
12	48	31	56	26	——	Ditto	.04	—— Dew Point ..... Ditto ..... 38°.99
13	51	38	61	34	W	Ditto		—— Degree of Dryness .... Ditto ..... 1°.37
14	53	31	60	26	——	Strong		—— Degree of Moisture .. Ditto ..... .957
15	51	40	61	38	——	Brisk	.14	—— Force of Vapour .... Ditto ..... .272 inch.
16	47	32	60	26	——	Ditto		Least observed degree of Moisture ..... .634
17	46	26	55	19	——	Ditto		Maximum Temperature in the Shade .... 53°.
18	38	23	40	15	——	Little	.30	Minimum Temperature in ditto ..... 20°.
19	40	30	59	29	SE	Ditto		Maximum Temperature in the Sun ..... 71°.
20	39	34	48	31	NE	Strong	.14	Minimum of Terrestrial Radiation ..... 14°.
21	42	32	51	26	——	Brisk	.20	Mean Temperature of External Air ..... 40°.40
22	51	41	51	39	W	Ditto	.24	
23	52	31	65	25	NW	Little	.03	
24	51	34	62	28	W	Ditto	.04	
25	51	29	60	22	NW	Brisk	.06	
26	43	26	61	19	W	Little		
27	51	31	61	24	——	Ditto		
28	52	40	64	34	——	Ditto		
	47.14	33.67	55.67	28.89			2.19	

WINDS.

North	1 day.	N. East.....	3 days
South	2 ..	S. East.....	2 ..
East.....	0 ..	N. West.....	3 ..
West	11 ..	S. West.....	6 ..

28 days.

Amount of Rain.....2.19 inches.

MARCH.

	1839.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	F.	1	30.045	46	40	6	Overcast	29.993	47	45	2	Cloudy	29.892	41	41	—	Fine
	S.	2	29.886	46	46	—	Fine	—.914	57	43	14	Very Fine	30.012	41	40	1	Ditto
	S.	3	30.076	42	42	—	Foggy	30.088	51	47	4	Slight Haze	—.071	41	41	—	Ditto
	M.	4	—.063	38	38	—	Cold haze	—.057	43	35	8	Fine but Cold	—.118	36	33	3	Cold Haze
	T.	5	—.126	34	29	5	Ditto	—.123	34	29	5	Bleak & Cold	—.058	34	29	5	Ditto
	W.	6	29.894	31	25	6	Frosty	29.835	34	25	9	Ditto	29.726	25	25	—	Sharp Frost
	Th.	7	—.596	27	24	3	Sharp Frost	—.543	32	32	—	Snowing	—.624	30	30	—	Stormy
☾	F.	8	—.769	30	26	4	Cloudy & Cold	—.860	34	29	5	Cloudy & Cold	—.981	25	25	—	Sharp Frost
	S.	9	—.987	26	26	—	Frosty	30.004	38	23	15	Fine	30.139	24	23	1	Ditto
	S.	10	30.196	27	25	2	Cloudy & Do.	—.226	40	32	8	Cloudy	—.238	32	32	—	Overcast
	M.	11	—.216	33	32	1	Clear	—.195	45	30	15	Dry Haze	—.163	32	32	—	Ditto
	T.	12	—.114	33	32	1	Frosty Haze	—.064	50	50	—	Hazy	—.091	39	39	—	Ditto
	W.	13	—.074	40	40	—	Foggy	—.044	53	53	—	Ditto	—.041	45	45	—	Ditto
	Th.	14	—.023	45	45	—	Rain	—.044	53	53	—	Ditto	—.076	48	48	—	Ditto
●	F.	15	29.848	47	47	—	Heavy rain	29.626	51	51	—	Rain	29.396	48	48	—	Rain
	S.	16	—.271	48	45	3	Cloudy & Fine	—.261	48	45	3	Fine	—.314	48	48	—	Ditto
	S.	17	—.482	40	38	2	Overcast	—.600	42	40	2	Overcast	—.821	36	36	—	Overcast
	M.	18	—.805	35	33	2	Ditto	—.934	36	36	—	Cold Haze	30.021	34	34	—	Ditto
	T.	19	30.026	32	32	—	Ditto	30.039	45	37	8	Cloudy	—.064	32	32	—	Frosty
	W.	20	—.003	37	37	—	Ditto	29.934	48	48	—	Rain	29.712	42	42	—	Rain
	Th.	21	29.620	46	46	—	Cloudy & Damp	—.601	55	50	5	Fine	—.651	46	46	—	Ditto
☽	F.	22	—.690	43	40	3	Fine	—.718	47	37	10	Cloudy	—.733	46	46	—	Ditto
	S.	23	—.717	50	50	—	Cloudy	—.662	56	52	4	Fine	—.661	49	49	—	Slight Ditto
	S.	24	—.680	47	45	2	Overcast	—.679	57	36	21	Ditto	—.656	49	46	3	Fine
	M.	25	—.659	45	43	2	Clear	—.634	50	37	13	Overcast	—.706	40	40	—	Slightly Overcast
	T.	26	—.771	41	41	—	Fine	—.882	46	34	12	Dry Haze	—.946	41	41	—	Fine
	W.	27	—.667	50	50	—	Overcast	—.343	51	51	—	Showery	—.608	54	54	—	Densely Overcast
	Th.	28	—.402	44	44	—	Showery	—.523	45	34	11	Fine	—.477	42	42	—	Rain
	F.	29	—.448	41	41	—	Overcast	—.442	47	34	13	Ditto	—.419	42	42	—	Clear
○	S.	30	—.778	37	35	2	Cold Haze	—.800	46	31	15	Cold dry haze	—.770	38	38	—	Overcast
	S.	31	—.614	44	42	2	Overcast	—.563	48	46	2	Overcast	—.543	45	45	—	Rain
			29.824	39.51	38.03	1.48		29.817	46.09	39.55	6.54		29.829	39.51	39.09	0.42	

MARCH.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	50	39	62	32	SW	Brisk		
2	57	38	71	34	——	Little		
3	52	35	59	30	NE	Ditto		
4	52	32	59	29	——	Brisk		
5	35	30	46	25	——	Ditto		
6	35	25	47	20	——	Ditto	.06	
7	35	29	39	24	NW	Ditto		
8	38	21	48	10	N	Ditto		
9	40	20	59	9	NW	Ditto		
10	42	30	56	24	SE	Ditto		
11	46	32	60	23	——	Ditto		
12	47	37	63	35	——	Little		
13	55	41	66	40	——	Ditto	.03	
14	55	44	59	42	S	Ditto	.39	
15	52	40	53	38	SW	Ditto	.29	
16	54	36	62	33	——	Ditto	.10	
17	43	34	67	32	E	Ditto		
18	37	27	37	20	NE	Ditto		
19	49	29	66	21	NW	Ditto		
20	49	41	51	39	SW	Brisk	.09	
21	56	41	67	36	W	Little	.07	
22	55	43	59	39	——	Brisk		
23	55	45	59	44	SW	Ditto	.07	
24	58	40	72	33	W	Ditto		
25	53	37	66	33	——	Strong	.03	
26	52	39	71	32	E	Little	.05	
27	54	41	59	40	W	Ditto	.14	
28	54	39	65	32	NE	Ditto	.20	
29	47	31	60	25	——	Ditto		
30	45	37	57	34	——	Brisk		
31	48	40	54	39	SE	Little	.16	
	48.32	35.58	59.00	30.54			1.95	

The mean temperature was very little below the average. The amount of rain was greater than usual, and the Barometer averaged lower. The 7th was stormy, and sharp frosts occurred on the nights of the 8th and 9th. The evening of the 12th was fine with a very luminous but contracted halo round the moon. The weather on the whole was more cloudy and wet than is usually the case in this month.

Mean Pressure from the 3 daily observations 29.823 inches.
—— Temperature ..... Ditto ..... 41°.70
—— Dew Point ..... Ditto ..... 38°.89
—— Degree of Dryness ... Ditto ..... 2°.81
—— Degree of Moisture .. Ditto ..... .903
—— Force of Vapour ..... Ditto ..... .271 inch.
Least observed degree of Moisture ..... .488
Maximum Temperature in the Shade .... 58°.
Minimum Temperature in ditto ..... 20°.
Maximum Temperature in the Sun ..... 72°.
Minimum of Terrestrial Radiation ..... 9°.
Mean Temperature of External Air ..... 41°.95

WINDS.

North .....1 day.	N. East.....8 days.
South ..... 1 ..	S. East.....5 ..
East ..... 2 ..	N. West.....3 ..
West..... 5 ..	S. West .....6 ..

31 days.

Amount of Rain..... 1.95 inches.

APRIL.

	1839.	Days.	Morning. Barom.	Hygrometer.			Weather.	Noon. Barom.	Hygrometer.			Weather.	Night. Barom.	Hygrometer.			Weather.
	M.	1	29.671	42	42	—	Rain	29.601	45	45	—	Rain	29.672	40	40	—	Rain
	T.	2	—.761	39	39	—	Overcast	—.826	40	40	—	Slight Ditto	—.929	40	40	—	Overcast
	W.	3	—.910	35	32	3	Bleak & Cold	—.924	35	34	1	Bleak & Cold	—.974	32	32	—	Ditto
	Th.	4	30.013	34	29	5	Ditto	30.028	36	32	4	Ditto	—.939	34	33	1	Ditto
	F.	5	29.827	33	33	—	Snowing	29.851	36	36	—	Thawing	—.995	35	35	—	Drizzly
	S.	6	30.154	37	37	—	Clear	30.245	42	30	12	Cloudy & Cold	30.358	28	28	—	Clear
☾	S.	7	—.413	34	31	3	Ditto	—.415	48	32	16	Fine	—.417	31	30	1	Ditto
	M.	8	—.343	39	31	8	Ditto	—.333	38	38	—	Snowing	—.348	35	35	—	Slight Snow
	T.	9	—.373	40	35	5	Fine	—.389	41	35	6	Bleak & Cold	—.434	37	32	5	Overcast
	W.	10	—.459	41	39	2	Overcast	—.455	50	32	18	Fine	—.550	32	32	—	Clear
	Th.	11	—.543	38	33	5	Fine but Cold	—.515	48	37	11	Ditto	—.442	36	32	4	Overcast
	F.	12	—.307	42	39	3	Overcast&Do.	—.228	47	40	7	Bleak & Cold	—.275	40	40	—	Ditto
●	S.	13	—.278	45	40	5	Ditto	—.278	48	38	10	Ditto	—.242	41	41	—	Ditto
	S.	14	—.247	47	43	4	Ditto	—.217	55	43	12	Overcast	—.215	48	44	4	Ditto
	M.	15	—.140	54	33	21	Overcast	—.106	51	35	16	Ditto	29.975	46	45	1	Ditto & Fine
	T.	16	29.836	46	41	5	Ditto	29.734	60	39	21	Very Fine	—.535	48	44	4	Fine
	W.	17	—.409	47	43	4	Cloudy	—.457	50	50	—	Showery	—.456	42	42	—	Rain
	Th.	18	—.491	50	50	—	Boisterous	—.578	54	54	—	Ditto	—.539	50	50	—	Boisterous with Do.
	F.	19	—.646	50	50	—	Fine	—.758	55	35	20	Very Fine	—.965	45	45	—	Fine
☽	S.	20	30.069	47	42	5	Ditto	30.086	43	43	—	Showery	30.235	41	41	—	Very Clear
	S.	21	—.260	48	41	7	Ditto	—.262	54	48	6	Fine	—.273	50	50	—	Fine
	M.	22	—.270	50	50	—	Ditto	—.244	63	45	18	Very Fine	—.168	49	49	—	Ditto
	T.	23	—.004	51	51	—	Rain	29.958	54	54	—	Rain	29 982	42	40	2	Overcast
	W.	24	—.083	44	40	4	Overcast	30.075	50	32	18	Fine	30.111	36	36	—	Very Clear
	Th.	25	—.086	41	38	3	Clear	—.038	52	35	17	Ditto	—.090	40	40	—	Fine
	F.	26	—.139	47	39	8	Slightly Overcast	—.148	55	40	15	Ditto	—.219	42	42	—	Ditto
	S.	27	—.242	49	43	6	Ditto	—.234	61	41	20	Dry haze	—.262	46	46	—	Fine
○	S.	28	—.335	52	42	10	Very Fine	—.313	62	42	20	Very Fine	—.331	43	43	—	Clear
	M.	29	—.262	46	43	3	Ditto	—.190	64	42	22	Ditto	—.182	50	50	—	Do. and Fine
	T.	30	—.145	52	48	4	Ditto	—.106	68	47	21	Ditto	—.039	51	51	—	Very Fine
			30.090	44.00	39.90	4.10		30.086	50.16	39.80	10.36		30.105	41.00	40.27	0.73	

APRIL.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	45	38	51	37	E	Brisk		.07	This month proved cold and unseasonable. East and NE. winds, and frosty nights were prevalent during the first half, and occasionally till as late as the 28th. A heavy fall of snow commenced on the morning of the 5th, and was followed by a very sharp frost on the night of the 6th, when the Radiating Thermometer fell 19° below the freezing-point. Peach trees on walls had been partially in flower for some time; but owing to the previously cold state of the weather, many blossoms were still not open and consequently escaped the destruction which happened to the earlier and stronger ones. The 18th was boisterous, with rain and hail. From the 23rd to the end of the month the air was very dry.
2	39	37	39	33	——	Strong			
3	36	31	36	29	NE	Brisk			
4	37	32	37	30	——	Ditto			
5	41	34	46	30	E	Little		.56	
6	43	24	50	13	NE	Ditto			
7	49	31	71	26	E	Ditto			
8	43	32	57	26	——	Brisk		.01	
9	41	36	52	34	——	Ditto			
10	52	29	68	20	——	Ditto			
11	53	37	68	26	NE	Ditto			
12	50	42	59	41	——	Ditto			
13	47	41	58	38	N	Little			
14	55	42	65	39	NW	Ditto			
15	53	40	60	36	SW	Ditto			
16	60	44	74	41	S	Ditto		.01	
17	55	39	75	35	SW	Brisk		.32	
18	58	46	66	44	——	Ditto		.20	
19	59	33	72	25	W	Ditto			
20	55	37	67	29	NW	Little		.01	
21	55	32	72	25	W	Ditto			
22	61	46	71	45	——	Ditto		.16	
23	55	39	67	29	——	Ditto		.12	
24	55	28	74	21	N	Brisk			
25	63	34	80	28	NE	Little			
26	54	38	68	30	SE	Ditto			
27	61	38	80	30	SW	Ditto			
28	63	30	86	23	E	Ditto			
29	68	37	90	29	——	Ditto			
30	73	41	96	32	NW	Ditto			
	52.63	36.26	65.16	30.80				1.46	

Mean Pressure from the 3 daily observations 30.094 inches.
—— Temperature ..... Ditto ..... 45°.05
—— Dew Point ..... Ditto ..... 39°.99
—— Degree of Dryness ... Ditto ..... 5°.06
—— Degree of Moisture .. Ditto ..... .823
—— Force of Vapour. .... Ditto .... . .280 inch.
Least observed degree of Moisture ..... .478
Maximum Temperature in the Shade ..... 73°.
Minimum Temperature in ditto ..... 24°.
Maximum Temperature in the Sun ..... 96°.
Minimum of Terrestrial Radiation ..... 13°.
Mean Temperature of External Air ..... 44°.44

WINDS.

North.....	2 days.	N. East.....	6 days.
South.....	1 ..	S. East.....	1 ..
East.....	9 ..	N. West.....	3 ..
West.....	4 ..	S. West.....	4 ..

30 days.

Amount of Rain..... 1.46 inch.

MAY.

		Morning.					Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	29.992	58	52	6	Very Fine	29.934	64	47	17	Overcast & Fine	29.891	51	51	—	Very Fine
Th.	2	—.935	61	56	5	Ditto	—.916	70	54	16	Very Fine	—.967	53	53	—	Ditto
F.	3	—.974	50	47	3	Ditto	—.935	67	52	15	Ditto	—.889	55	55	—	Ditto
S.	4	—.825	56	45	11	Ditto	—.758	72	46	26	Ditto	—.679	58	58	—	Ditto
S.	5	—.669	58	50	8	Ditto	—.710	72	52	20	Ditto	—.838	56	55	1	Ditto
☾ M.	6	—.921	56	53	3	Ditto	—.932	67	47	20	Fine	30.040	50	44	6	Ditto
T.	7	30.045	50	42	8	Clear & Dry	—.987	65	50	15	Ditto	29.973	48	35	13	Clear & Dry
W.	8	29.896	55	50	5	Fine	—.847	72	54	18	Ditto	— 843	53	53	—	Thund. & Lightn.
Th.	9	—.865	49	49	—	Cloudy & cool	—.851	55	45	10	Cloudy	— 819	44	44	—	Overcast & Cold
F.	10	—.871	44	44	—	Ditto	—.872	53	45	8	Ditto	30.026	44	44	—	Cloudy & Do.
S.	11	30.144	50	40	10	Fine but Cold	30.145	55	40	15	Fine but Cold	29.988	42	42	—	Ditto
S.	12	—.055	48	39	9	Cloudy	—.063	48	48	—	Rain	30.052	42	42	—	Overcast
● M.	13	29.947	47	43	4	Clear	29.777	62	44	18	Very Fine	29.662	45	45	—	Rain
T.	14	—.574	39	39	—	Cold Rain	—.540	47	30	17	Cloudy	—.490	38	38	—	Overcast
W.	15	—.400	42	36	6	Clear	—.357	51	40	11	Ditto	—.391	36	36	—	Clear
Th.	16	—.550	44	34	10	Ditto	—.586	54	37	17	Cloudy & Cold	—.816	40	40	—	Ditto
F.	17	—.999	47	42	5	Ditto	30.034	60	29	31	Fine	30.099	45	40	5	Fine
S.	18	30.117	56	50	6	Very Fine	—.086	64	44	20	Ditto	—.068	54	54	—	Ditto
S.	19	—.066	59	54	5	Overcast	—.095	69	69	—	Overcast	—.173	54	54	—	Ditto
☽ M.	20	—.236	64	58	6	Ditto & Fine	—.237	72	52	20	Very Fine	—.239	60	60	—	Overcast
T.	21	—.200	58	45	13	Dry Haze	—.125	70	47	23	Ditto	—.048	53	50	3	Fine
W.	22	29.994	52	40	12	Cold & Dry	—.010	50	50	—	Showery	—.169	43	40	3	Cold & Dry
Th.	23	30.162	49	36	13	Ditto	—.048	62	36	26	Fine	—.054	51	51	—	Overcast
F.	24	29.946	48	43	5	Ditto	29.986	51	45	6	Cloudy & Cold	—.067	43	40	3	Cold & Dry
S.	25	30.096	46	36	10	Ditto	30.141	52	32	20	Cold & Dry	—.202	41	39	2	Ditto
S.	26	—.207	49	39	10	Dry Haze	—.196	61	36	25	Fine	—.226	49	46	3	Clear
M.	27	—.232	53	50	3	Clear	—.209	67	40	27	Ditto	—.201	50	48	2	Fine
○ T.	28	—.227	57	50	7	Fine	—.230	63	50	13	Ditto	—.248	46	43	3	Ditto
W.	29	—.221	51	46	5	Ditto	—.175	67	50	17	Ditto	—.133	55	50	5	Ditto
Th.	30	—.095	54	53	1	Hazy	—.058	70	65	5	Very Fine	—.055	55	51	4	Overcast
F.	31	—.010	56	56	—	Ditto	29.985	67	63	4	Ditto	29.995	51	48	3	Ditto
		29.983	51.48	45.39	6.09		29.962	61.90	46.42	15.48		29.978	48.55	46.74	1.81	

MAY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	73	35	95	33	NE	Little		
2	72	43	94	39	——	Ditto		
3	70	43	96	35	NW	Ditto		
4	71	48	90	45	S	Ditto		
5	71	44	91	40	——	Ditto		
6	69	43	88	38	NE	Brisk		
7	71	41	90	35	E	Ditto		
8	72	44	88	44	——	Ditto	.13	
9	53	39	74	38	NE	Ditto	.42	
10	55	42	75	39	——	Ditto		
11	55	38	83	30	——	Ditto		
12	58	41	73	36	——	Ditto	.10	
13	64	34	82	33	W	Little	.13	
14	52	29	62	22	N	Brisk	.01	
15	53	28	62	20	S	Little		
16	58	28	80	19	——	Ditto		
17	63	31	79	23	W	Ditto		
18	64	50	78	47	SW	Brisk	.03	
19	70	50	82	46	——	Little		
20	73	54	86	52	E	Ditto		
21	72	42	84	35	NW	Ditto		
22	55	38	81	35	N	Strong		
23	64	43	94	40	NW	Brisk		
24	64	36	64	29	N	Ditto		
25	55	29	70	22	——	Ditto		
26	66	33	82	24	——	Little		
27	70	40	85	31	NE	Ditto		
28	64	40	82	37	E	Ditto		
29	72	46	84	41	NE	Ditto		
30	72	52	89	50	E	Ditto		
31	68	49	85	47	NE	Ditto		
	64.48	40.42	82.19	35.61			0.82	

The weather at the commencement of the month was very fine, but on the 8th, at night, a violent thunder storm commenced, with lightning, rain, and hail. Cold weather with brisk NE. winds succeeded. The walnut had only just got into leaf about the middle of the month, and was then cut back by the frosts which occurred between the 14th and 17th; even so late as the 25th a rather sharp frost was experienced. The mean temperature was, as in last month, several degrees below the mean. N.NE. and E. winds were prevalent. The amount of rain was only half the usual quantity, and according to the indications of the hygrometer, the air generally possessed a great degree of dryness.

Mean Pressure from the 3 daily observations 29.974 inches
—— Temperature .....Ditto..... 53°.97
—— Dew Point .....Ditto..... 46°.18
—— Degree of Dryness ....Ditto..... 7°.79
—— Degree of Moisture ...Ditto..... .766
—— Force of Vapour .....Ditto..... .352 inch.
Least observed degree of Moisture ..... .346
Maximum Temperature in the Shade ..... 73°.
Minimum Temperature in ditto..... 28°.
Maximum Temperature in the Sun ..... 96°.
Minimum of Terrestrial Radiation ..... 19°.
Mean Temperature of External Air ..... 52°.45

WINDS.

North.....	5 days.	N. East	10 days.
South.....	4 ..	S. East	0 ..
East	5 ..	N. West	3 ..
West.....	2 ..	S. West	2 ..

31 days.

Amount of Rain .....0.82 inch.

JUNE.

		Morning.					Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	29.969	53	50	3	Overcast	29.927	71	55	16	Fine, Dry	29.951	51	48	3	Fine
S.	2	—.906	55	47	8	Dry Haze	—.856	66	46	20	Dry Haze	—.810	50	50	—	Damp
M.	3	—.708	57	57	—	Foggy	—.687	62	62	—	Rain	—.647	54	54	—	Ditto
☾ T.	4	—.654	56	56	—	Ditto	—.656	63	56	7	Overcast	—.736	54	54	—	Cloudy
W.	5	—.822	60	56	4	Very Fine	—.850	70	60	10	Very Fine	—.903	55	55	—	Rain
Th.	6	—.937	60	60	—	Ditto	—.950	69	60	9	Ditto	—.937	56	54	2	Fine
F.	7	—.843	61	61	—	Rain	—.393	65	65	—	Rain	—.828	56	56	—	Ditto
S.	8	—.878	67	63	4	Overcast	—.850	70	63	7	Very Fine	—.901	58	58	—	Clear
S.	9	30.016	62	58	4	Very Fine	30.065	72	54	18	Ditto	30.215	60	58	2	Very Fine
M.	10	—.291	63	60	3	Ditto	—.278	72	55	17	Ditto	—.236	60	58	2	Ditto
● T.	11	—.223	65	60	5	Ditto	—.270	69	55	14	Ditto	—.262	59	59	—	Ditto
W.	12	—.225	67	61	6	Ditto	—.140	78	65	13	Ditto	—.002	62	62	—	Ditto
Th.	13	29.911	72	65	7	Ditto	29.870	80	69	11	Ditto	29.911	60	60	—	Ditto
F.	14	—.846	57	57	—	Hazy	—.847	62	62	—	Drizzly	—.889	60	60	—	Ditto
S.	15	—.929	59	59	—	Slight Haze	—.976	63	60	3	Slight Haze	30.171	60	55	5	Ditto
S.	16	—.936	62	55	7	Fine	30.126	70	56	14	Very Fine	—.279	61	56	5	Ditto
M.	17	30.195	62	59	3	Very Fine	—.124	76	68	8	Ditto	—.093	64	64	—	Thund. & Lightn.
☽ T.	18	—.025	70	70	—	Slight Haze	29.979	80	65	15	Thunder	29.940	62	62	—	Cloudy, Thunder
W.	19	29.948	66	63	3	Cloudy	30.011	75	64	11	Fine	30.140	62	62	—	VeryFine,Lightn.
Th.	20	30.134	65	63	2	Slight Haze	—.013	80	61	19	Very Hot	29.857	64	64	—	Slight showers
F.	21	29.764	67	65	2	Cloudy & Fine	29.807	74	58	16	Cloudy	—.785	60	56	4	Fine
S.	22	—.642	64	61	3	Overcast	—.504	62	62	—	Rain	—.409	55	55	—	Showery
S.	23	—.414	62	60	2	Windy	—.521	62	62	—	Do. & Stormy	—.702	58	58	—	Ditto
M.	24	—.797	62	58	4	Cloudy& Do.	—.832	70	68	2	Cloudy	—.896	60	58	2	Fine
T.	25	—.943	64	60	4	Cloudy	—.924	71	58	13	Very Fine	—.661	55	55	—	Rain
○ W.	26	—.566	65	60	5	Fine	—.470	74	74	—	Sultry, Thun.	—.497	58	58	—	Ditto
Th.	27	—.861	61	55	6	Ditto	—.846	68	58	10	Fine	—.743	55	55	—	Ditto
F.	28	—.663	60	60	—	Cloudy	—.671	64	64	—	Thunder showers	—.841	50	50	—	Ditto
S.	29	—.944	51	51	—	Rain	30.024	60	53	7	Cloudy & Cold	30.139	51	51	—	Overcast
S.	30	30.150	51	47	4	Overcast	—.213	55	45	10	Ditto	—.285	48	46	2	Ditto
		29.904	61.53	58.57	2.96		29.889	69.10	60.10	9.00		29.922	57.26	56.36	0.90	

JUNE.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	71	45	82	40	E	Little			
2	64	46	89	45	SE	Brisk		.33	The temperature was very little below the average. The rain, deficient in the former month, was plentiful in this, yet at intervals the air was found to possess a considerable degree of dryness, and the sun-heat was likewise powerful. Under these circumstances, vegetation made great progress. Between the 8th and 16th the weather was very fine; from the latter period to the 20th it became sultry with much thunder and lightning, as was occasionally the case to the 28th; the 23rd was stormy and wet; much rain fell on the 5th, 26th, and 28th. The two last days of the month were cloudy and cold for the season.
3	66	49	90	44	S	Little		.20	
4	66	46	82	42	NE	Ditto			
5	72	46	91	42	S	Ditto		.64	
6	71	53	85	49	SW	Ditto		.02	
7	64	49	86	45	S	Ditto		.17	
8	72	52	86	49	——	Ditto			
9	72	48	87	44	——	Brisk			
10	71	56	83	50	SW	Ditto			
11	70	49	93	43	W	Ditto			
12	81	56	100	51	S	Little			
13	81	53	110	52	E	Brisk			
14	64	55	67	55	——	Little			
15	63	47	77	43	NE	Ditto			
16	73	50	93	48	E	Ditto			
17	75	54	100	50	NE	Brisk			
18	84	58	106	55	SE	Little		.16	
19	76	45	95	43	SW	Ditto			
20	83	59	105	55	SE	Ditto		.01	
21	72	56	99	52	SW	Brisk			
22	66	55	98	52	S	Ditto		.11	
23	65	54	88	50	SW	Strong		.18	
24	70	54	87	49	——	Brisk			
25	74	55	97	53	S	Little		.07	
26	72	51	91	46	SW	Ditto		.51	
27	70	50	97	45	——	Ditto		.20	
28	54	49	68	47	W	Ditto		.40	
29	51	41	73	35	N	Brisk			
30	56	40	72	34	NW	Little			
	69.63	50.70	89.23	46.93			3	.00	

Mean Pressure from the 3 daily observations 29.905 inches.
—— Temperature ..... Ditto ..... 62°.63
—— Dew Point ..... Ditto ..... 58°.34
—— Degree of Dryness ... Ditto 429
—— Degree of Moisture .. Ditto ..... .874
—— Force of Vapour ..... Ditto ..... .531 inch.
Least observed degree of Moisture ..... .519
Maximum Temperature in the Shade..... 84°.
Minimum Temperature in ditto ..... 40°.
Maximum Temperature in the Sun .... 110°.
Minimum of Terrestrial Radiation ..... 34°.
Mean Temperature of External Air ..... 60°.16

WINDS.

North	1 day	N. East	3 days
South	8 ..	S. East	3 ..
East	4 ..	N. West	1 ..
West	2 ..	S. West	8 ..

30 days.
Amount of Rain..... 3 inches.

JULY.

		Morning.					Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
M.	1	30.296	55	48	7	Fine	30.315	66	46	20	Fine	30.215	53	53	—	Clear
T.	2	—.307	58	55	3	Hazy	—.292	69	57	12	Ditto	—.220	59	59	—	Fine
W.	3	—.304	59	55	4	Overcast & fine	—.271	71	55	16	Ditto	—.244	61	61	—	Slight Haze
☾ Th.	4	—.204	66	62	4	Very Fine	—.178	77	65	12	Very Fine	—.183	61	55	6	Fine
F.	5	—.191	65	60	5	Slight Haze	—.163	72	64	8	Ditto	—.097	65	60	5	Ditto
S.	6	29.925	66	63	3	Ditto	29.920	76	67	9	Sultry	29.901	66	63	3	Very Fine
S.	7	—.842	69	60	9	Very Fine	—.784	78	68	10	Very Hot	—.701	60	60	—	Thun. & much light.
M.	8	—.628	65	61	4	Ditto	—.647	73	66	7	Ditto	30.082	58	56	2	Clear
T.	9	—.713	61	56	5	Fine	—.728	69	59	10	Cloudy	29.726	55	55	—	Ditto
● W.	10	30.017	66	60	6	Ditto	—.976	71	60	11	Fine	30.011	60	58	2	Ditto
Th.	11	29.991	66	60	6	Ditto	—.958	76	61	15	Ditto	29.887	65	63	2	Very Fine
F.	12	—.820	69	65	4	Cloudy	—.837	72	70	2	Cloudy	—.921	62	62	—	Slight Rain
S.	13	30.078	62	60	2	Very Fine	30.116	74	58	16	Very Fine	30.097	61	60	1	Very Fine
S.	14	—.006	70	52	18	Ditto	29.933	68	68	—	Rain	29.880	63	63	—	Cloudy
M.	15	29.976	64	60	4	Ditto	30.034	70	47	23	Fine	30.156	61	60	1	Fine
T.	16	30.171	64	65	9	Ditto	—.166	71	54	17	Ditto	—.260	58	58	—	Clear
W.	17	—.080	65	60	5	Ditto	29.956	76	48	28	Slightly Overcast	29.758	65	65	—	Thunder, Rain
☽ Th.	18	29.519	68	68	—	Rain	—.485	72	72	—	Showery	—.684	59	58	1	Windy
F.	19	—.616	64	60	4	Boisterous	—.684	70	55	15	Cloudy	—.695	60	60	—	Boisterous
S.	20	—.726	68	64	4	Fine	—.753	70	60	10	Ditto	—.825	58	58	—	Fine
S.	21	—.889	63	60	3	Overcast	—.924	66	53	13	Fine	30.006	60	55	5	Ditto
M.	22	30.078	69	59	10	Fine	30.087	67	60	7	Cloudy	—.039	58	58	—	Very Fine
T.	23	—.062	63	63	—	Overcast	—.024	71	68	3	Showery	29.926	59	59	—	Rain
W.	24	29.802	65	65	—	Rain	29.781	74	68	6	Fine	—.792	61	61	—	Cloudy
Th.	25	—.780	63	63	—	Overcast	—.787	70	63	7	Cloudy & do.	—.823	59	59	—	Clear
○ F.	26	—.782	63	57	6	Ditto	—.701	67	67	—	Rain [showers	—.551	56	56	—	Heavy Rain
S.	27	—.575	61	59	2	Cloudy	—.634	58	58	—	Heavy thunder	—.642	56	56	—	Rain
S.	28	—.833	59	59	—	Ditto	—.900	64	64	—	Cloudy	—.969	56	56	—	Damp
M.	29	30.056	61	57	4	Fine	—.995	64	60	4	Do. & Dull	—.688	56	56	—	Rain
T.	30	29.781	59	54	5	Overcast	—.750	62	62	—	Rain	—.524	55	55	—	Ditto
W.	31	—.329	59	59	—	Rain	—.298	62	62	—	Ditto	—.718	52	52	—	Ditto
		29.917	63.70	59.64	4.06		29.906	69.87	60.80	9.07		29.910	59.29	58.39	0.90	

JULY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	65	45	81	40	NE	Little		
2	70	51	86	48	——	Ditto		
3	67	50	93	43	——	Ditto		
4	71	56	96	53	——	Ditto		
5	72	52	86	46	SW	Ditto		
6	76	53	100	50	——	Ditto		
7	78	58	100	54	——	Ditto	.03	
8	70	50	101	46	——	Brisk		
9	70	49	101	44	——	Ditto		
10	73	51	88	48	——	Ditto		
11	77	59	94	55	——	Ditto		
12	72	50	89	45	——	Little	.08	
13	81	49	97	44	N W	Ditto		
14	71	54	85	50	S	Ditto	.07	
15	71	47	88	41	W	Brisk	.01	
16	74	47	93	40	SW	Little		
17	80	61	98	60	S	Brisk	.34	
18	73	56	80	50	——	Strong	.06	
19	69	59	74	57	——	Ditto		
20	76	53	76	49	SW	Brisk		
21	70	54	81	49	——	Ditto	.01	
22	73	53	93	47	——	Little	.20	
23	66	59	79	59	S	Ditto	.23	
24	69	56	85	53	——	Brisk		
25	65	50	86	45	SW	Little		
26	66	52	67	48	S	Ditto	.70	
27	62	54	82	53	SW	Ditto	.31	
28	66	51	70	48	W	Ditto	.01	
29	66	54	68	54	S	Ditto	.40	
30	62	55	67	55	E	Ditto	.21	
31	67	52	70	50	SW	Strong	.26	
	70.58	52.90	85.61	49.16			2.92	

The temperature was below the average as was also the pressure. When such is the case the amount of rain is generally greater than usual; and this it proved to be in the present month, the excess being about half an inch. After the 13th there were only 5 days free from rain more or less. Nearly 2 inches fell between the 26th and 31st.

The early progress of vegetation was so much retarded that notwithstanding the favourable weather of the last month the state of the crops was still backward at the end of this.

Mean Pressure from the 3 daily observations 29.911 inches.
—— Temperature .....Ditto..... 64°.28
—— Dew Point .....Ditto..... 59°.61
—— Degree of Dryness ....Ditto..... 4°.67
—— Degree of Moisture....Ditto..... .862
—— Force of Vapour.....Ditto..... .553 inch.
Least observed degree of Moisture..... .401
Maximum Temperature in the Shade ..... 81°.
Minimum Temperature in Ditto..... 45°.
Maximum Temperature in the Sun ..... 101°.
Minimum of Terrestrial Radiation ..... 40°.
Mean Temperature of External Air..... 61°.74

WINDS.

North.....0 days.		N. East ....4 days.	
South 8	..	S. East.....0	..
East 1	..	N. West....1	..
West 2	..	S. West ...15	..

31 days.

Amount of Rain ..... 2.92 inches.

AUGUST.

	Morning.						Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
Th.	1	29.939	61	55	6	Fine	30.006	69	56	13	Very Fine	30.085	59	59	—	Very Fine
☾ F.	2	30.095	66	60	6	Very Fine	—.066	72	56	16	Ditto	—.049	62	62	—	Clear & Do.
S.	3	—.063	70	67	3	Ditto	—.069	79	70	9	Very Hot	—.138	65	65	—	VeryFine
S.	4	—.204	64	58	6	Overcast& Do.	—.253	69	60	9	Very Fine	—.325	59	59	—	Ditto
M.	5	—.296	60	53	7	Very Fine	—.200	70	46	24	Ditto	—.269	61	61	—	Ditto
T.	6	—.201	64	60	4	Ditto	—.147	72	57	15	Ditto	—.049	60	59	1	Ditto
W.	7	29.855	62	62	—	Overcast	29.774	65	65	—	Rain	29.830	58	58	—	Rain, Thunder
Th.	8	—.965	60	60	—	Fine	30.019	66	54	12	Overcast & Fine	30.026	60	60	—	Fine
● F.	9	30.167	62	60	2	Very Fine	—.141	73	59	14	Cloudy & Do.	—.100	59	57	2	Ditto
S.	10	—.121	63	59	4	Ditto	—.087	70	52	18	Fine [Clouds	—.120	58	58	—	Do. and Clear
S.	11	—.043	62	57	5	Cloudy	—.080	67	67	—	Do. with	—.252	58	58	—	Fine
M.	12	—.287	57	53	4	Fine	—.282	69	49	20	Ditto	—.263	58	58	—	Ditto
T.	13	—.198	59	59	—	Very Fine	—.133	67	48	19	Very Fine	—.081	59	59	—	Ditto
W.	14	—.001	65	58	7	Ditto	29.951	72	52	20	Ditto	29.967	60	60	—	Ditto
Th.	15	29.689	61	61	—	Hazy	—.626	68	68	—	Drizzly	—.621	59	59	—	Ditto
F.	16	—.632	61	61	—	Very Fine	—.619	69	60	9	Cloudy	—.626	59	59	—	Ditto
D S.	17	—.657	60	60	—	Rain	—.712	68	68	—	Very Fine	—.862	57	57	—	Damp
S.	18	—.988	56	55	1	Fine	30.030	70	53	17	Ditto	30.025	58	58	—	Heavy Rain
M.	19	—.932	60	60	—	Cloudy	29.961	56	56	—	Heavy Rain	—.040	52	52	—	Damp
T.	20	—.968	51	49	2	Hazy	30.085	61	54	7	Fine	—.205	52	52	—	Clear
W.	21	30.221	51	46	5	Clear	—.213	60	43	17	Ditto	—.207	48	48	—	Ditto
Th.	22	—.219	51	49	2	Ditto	—.213	70	48	22	Very Fine	—.247	58	56	2	Very Fine
F.	23	—.242	64	59	5	Very Fine	—.246	73	65	8	Ditto	—.184	62	62	—	Ditto
○ S.	24	—.136	61	61	—	Hazy	—.090	73	70	3	Ditto	—.013	62	60	2	Ditto
S.	25	—.001	64	60	4	Very Fine	29.974	73	60	13	Ditto	29.971	61	61	—	Ditto
M.	26	29.950	63	58	5	Ditto	—.926	73	62	11	Ditto[Showers	—.838	61	60	1	Ditto
T.	27	—.792	59	55	4	Overcast	—.821	60	54	6	Do. Slight	—.958	51	51	—	Damp
W.	28	30.053	53	53	—	Hazy	30.052	66	52	14	Ditto	30.029	60	60	—	Fine
Th.	29	29.923	63	60	3	Ditto	29.896	73	67	6	Cloudy & Do.	29.878	61	60	1	Ditto
F.	30	—.828	62	62	—	Rain	—.804	70	70	—	Do. & mild	—.762	61	61	—	Ditto
☾ S.	31	—.544	63	60	3	Cloudy	—.437	61	61	—	Rain	—.172	51	51	—	Showery
		30.007	60.58	57.74	2.84		29.997	68.51	57.80	10.71		30.005	58.35	58.06	0.29	

AUGUST.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	76	50	95	46	SW	Little		
2	82	53	95	48	S	Brisk		
3	85	57	104	52	SW	Little		
4	74	46	90	41	W	Ditto		
5	74	49	93	42	NE	Ditto		
6	74	58	89	55	W	Ditto	.01	
7	70	51	80	48	SW	Brisk	.15	
8	74	47	90	41	W	Little		
9	75	53	94	47	——	Ditto		
10	74	54	94	48	——	Brisk		
11	70	58	83	41	NW	Little	.01	
12	71	49	93	43	——	Ditto	.04	
13	70	52	91	48	——	Ditto		
14	70	54	83	50	S	Ditto		
15	74	52	100	46	E	Ditto	.04	
16	77	54	99	48	W	Ditto	.58	
17	71	50	73	45	SW	Ditto	.08	
18	71	53	91	51	NE	Ditto	.24	
19	61	45	73	41	NW	Ditto	.12	
20	63	37	79	29	N	Ditto	.01	
21	66	39	86	31	——	Ditto		
22	73	55	90	49	W	Ditto		
23	77	49	98	44	NW	Ditto		
24	75	50	95	56	SW	Ditto		
25	77	46	94	40	W	Ditto		
26	73	54	95	51	SW	Ditto		
27	70	45	84	40	NW	Ditto	.15	
28	72	56	91	52	——	Ditto		
29	71	56	77	52	SW	Ditto	.02	
30	67	51	68	48	S	Ditto	.10	
31	63	55	63	52	SW	Ditto	.30	
	72.25	50.58	88.06	45.96			1.85	

The state of the barometer was exactly as much above the average in this month as it was below in the preceding; when the barometer, as in last month, averaged .052 *below* the mean the excess of rain was half an inch; and when it stood, as in this month .52 *above* the mean, the deficiency in the amount of rain was half an inch, affording an example of the reciprocal indications of the two instruments. The temperature was nearly a degree below the average, but, on the whole the weather was favourable.

Mean Pressure from the 3 daily observations 30.003 inches.
—— Temperature.....Ditto..... 62°.48
—— Dew Point.....Ditto..... 57°.82
—— Degree of Dryness....Ditto..... 4°.61
—— Degree of Moisture...Ditto..... .864
—— Force of Vapour.....Ditto..... .522 inch.
Least observed degree of Moisture..... .457
Maximum Temperature in the Shade.... 85°.
Minimum Temperature in ditto..... 37°.
Maximum Temperature in the Sun ..... 104°.
Minimum of Terrestrial Radiation ..... 29°.
Mean Temperature of External Air ..... 61°.41

WINDS.

North	2 days	N. East.....	2 days.
South	3 ..	S. East.....	0 ..
East.....	1 ..	N. West	7 ..
West.....	8 ..	S. West.....	8 ..

31 days.

Amount of Rain ..... 1.85 inches.

SEPTEMBER.

	Morning.						Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	29.061	61	61	—	Cloudy	29.103	61	58	3	Boisterous	29.185	56	51	5	Clear
M.	2	—.194	57	53	4	Clear	—.207	63	56	7	Showery	—.314	51	51	—	Showers
T.	3	—.440	57	55	2	Fine	—.477	61	61	—	Rain	—.634	51	51	—	Fine
W.	4	—.745	55	51	4	Very Fine	—.859	66	51	15	Very Fine	—.962	59	59	—	Overcast
Th.	5	—.910	62	62	—	Damp	—.901	69	69	—	Drizzly	—.885	61	61	—	Rain
F.	6	—.998	61	58	3	Very Fine	30.036	69	55	14	Very Fine	30.067	56	56	—	Fine
● S.	7	—.918	62	59	3	Fine	29.850	67	59	8	Cloudy	29.785	56	54	2	Boisterous
S.	8	—.936	66	63	3	Ditto	30.006	69	66	3	Overcast	—.983	61	58	3	Overcast
M.	9	30.026	61	60	1	Hazy	—.000	71	68	3	Fine	—.971	62	62	—	Very Fine
T.	10	29.999	64	64	—	Foggy	—.006	71	66	5	Very Fine	30.131	62	62	—	Overcast
W.	11	30.047	60	60	—	Overcast	29.974	72	69	3	Overcast	29.878	62	62	—	Fine
Th.	12	29.804	60	60	—	Hazy	—.785	62	59	3	Ditto	—.726	54	54	—	Clear
F.	13	—.669	53	50	3	Clear	—.595	64	53	11	Very Fine	—.429	54	54	—	Ditto
S.	14	—.165	56	56	—	Rain	—.127	61	61	—	Heavy Rain	—.120	56	56	—	Heavy Rain
S.	15	—.134	61	61	—	Heavy Rain	—.182	56	56	—	Showery	.288	52	52	—	Rain
☽ M.	16	—.356	61	61	—	Rain	—.382	66	58	8	Cloudy	—.381	55	55	—	Heavy Ditto
T.	17	—.536	56	54	2	Clear	—.527	57	57	—	Heavy Rain	—.467	51	51	—	Ditto
W.	18	—.511	54	54	—	Ditto	—.556	63	63	—	Showery	—.550	52	52	—	Damp
Th.	19	—.500	55	55	—	Fine but Damp	—.494	61	61	—	Overcast	—.465	51	51	—	Clear
F.	20	—.616	52	52	—	Overcast	—.621	63	57	6	Very Fine	—.611	51	51	—	Damp
S.	21	—.551	52	52	—	Rain	—.548	54	54	—	Clearing	—.631	49	49	—	Fine
S.	22	—.621	51	51	—	Fine	—.620	59	59	—	Cloudy	—.773	52	52	—	Damp
○ M.	23	—.765	47	47	—	Foggy	—.796	61	54	7	Very Fine	—.877	51	51	—	Clear
T.	24	—.885	47	47	—	Ditto	—.866	64	58	6	Cloudy	—.798	56	56	—	Overcast, Fine
W.	25	—.749	61	61	—	Rain	—.782	65	65	—	Showery	—.841	56	56	—	Slight Rain
Th.	26	—.839	55	55	—	Fine	—.841	65	55	10	Very Fine	—.886	56	56	—	Fine
F.	27	—.917	49	49	—	Ditto	—.876	62	50	12	Cloudy & Fine	—.693	54	54	—	Slight Rain
S.	28	—.484	57	57	—	Drizzly	—.474	60	60	—	Drizzly	—.528	46	46	—	Fine
☾ S.	29	—.625	43	43	—	Heavy Dew	—.750	61	60	1	Fine	—.980	50	50	—	Ditto
M.	30	—.832	42	42	—	Foggy	—.975	64	55	9	Very Fine	—.979	54	53	1	Ditto
		29.661	55.93	55.10	0.83		29.673	63.56	59.10	4.46		29.693	54.46	54.20	0.36	

SEPTEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	68	50	68	45	SW	Strong	.01	
2	66	50	76	46	——	Brisk	.11	This was a very wet month, the amount of rain being little
3	67	46	80	40	——	Ditto	.01	short of four inches, yet the average temperature was fully
4	71	53	89	47	W	Little	.19	maintained in consequence of the prevalence of S. and SW.
5	70	53	86	49	SW	Ditto	.06	winds. The barometer was generally very low, exceeding 30
6	74	46	89	41	W	Ditto	.04	inches only in a few instances. The 1st and 7th were very
7	66	55	89	51	SW	Brisk		boisterous. A splendid Aurora Borealis was seen on the even-
8	71	61	81	57	——	Little		ing of the 3rd. The air was nearly as much loaded with
9	75	51	89	47	——	Brisk		moisture throughout the month, as it usually is in November.
10	78	59	93	57	——	Little		
11	69	58	73	56	S	Ditto	.04	Mean Pressure from the 3 daily observations 29.679 inches.
12	63	41	70	37	W	Ditto		—— Temperature ..... Ditto ..... 57°.98
13	65	50	75	44	S	Ditto	.09	—— Dew Point ..... Ditto ..... 56°.13
14	66	50	73	46	SE	Ditto	.84	—— Degree of Dryness .... Ditto ..... 1°.75
15	68	50	71	47	S	Ditto	.20	—— Degree of Moisture .. Ditto ..... .941
16	65	51	76	47	——	Brisk	.21	—— Force of Vapour ..... Ditto ..... .494 inch.
17	62	46	65	43	——	Little	.90	Least observed degree of Moisture ..... .610
18	67	46	81	41	SW	Brisk	.52	Maximum Temperature in the Shade .... 78°.
19	64	48	81	44	S	Little	.08	Minimum Temperature in ditto ..... 36°.
20	67	49	79	46	SW	Ditto	.04	Maximum Temperature in the Sun ..... 93°.
21	63	42	68	39	N	Ditto	.30	Minimum of Terrestrial Radiation ..... 33°.
22	64	41	75	48	S	Ditto	.17	Mean Temperature of External Air ..... 57°.71
23	67	38	79	36	SW	Ditto		
24	66	54	69	51	S	Brisk	.06	WINDS.
25	71	48	77	43	——	Little	.03	North .....1 day | N. East ....0 days.
26	66	42	74	37	——	Ditto		South.....11 .. | S. East ....1 ..
27	64	49	74	44	SW	Ditto	.01	East.....1 .. | N. West....0 ..
28	65	36	75	33	S	Ditto	.01	West .....3 .. | S. West ...13 ..
29	66	36	75	34	SW	Ditto		30 days.
30	67	41	82	36	E	Ditto		Amount of Rain.....3.92 inches.
	67.36	48.06	77.73	44.40			3.92	

OCTOBER.

		Morning.					Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
T.	1	29.988	47	47	—	Foggy	29.962	64	55	9	Very Fine	29.856	49	49	—	Foggy
W.	2	—.698	50	50	—	Ditto	—.659	64	60	4	Cloudy	—.803	50	50	—	Rain
Th.	3	—.992	44	44	—	Fine	—.960	57	47	10	Very Fine	—.790	51	51	—	Overcast
F.	4	—.447	56	56	—	Rain	—.459	64	55	9	Cloudy	—.655	51	51	—	Stormy & wet
S.	5	—.978	50	50	—	Boisterous	—.985	55	50	5	Do. & Windy	30.277	44	44	—	Clear
S.	6	30.302	48	48	—	Fine	30.319	58	48	10	Fine	—.351	50	50	—	Ditto
● M.	7	—.315	47	47	—	Overcast	—.288	59	51	8	Cloudy & Do.	—.226	52	52	—	Fine
T.	8	—.130	52	52	—	Hazy	—.056	62	59	3	Very Fine	29.861	56	56	—	Ditto
W.	9	29.800	60	60	—	Ditto	29.762	66	59	7	Ditto	—.690	56	56	—	Overcast
Th.	10	—.618	60	60	—	Cloudy	—.645	65	65	—	Showery	—.687	56	56	—	Clear
F.	11	—.578	63	63	—	Fine	—.495	69	66	3	Very Fine	—.651	60	60	—	Fine
S.	12	—.788	53	52	1	Clear	—.917	61	55	6	Ditto	30.050	50	50	—	Ditto
S.	13	30.016	50	50	—	Foggy	30.020	51	41	10	Ditto	29.987	51	51	—	Ditto
M.	14	29.920	55	55	—	Fine	29.876	61	54	7	Fine	—.815	48	48	—	Clear
☽ T.	15	—.833	46	46	—	Slight Fog	—.880	58	56	2	Ditto	—.937	44	44	—	Ditto
W.	16	30.066	44	44	—	Ditto	30.037	60	50	10	Very Fine	30.055	40	40	—	Overcast
Th.	17	—.085	42	42	—	Hazy	—.083	54	54	—	Foggy	—.050	46	46	—	Ditto
F.	18	29.861	51	51	—	Ditto	29.889	54	54	—	Cloudy	29.917	45	45	—	Drizzly
S.	19	30.033	49	49	—	Foggy	30 056	56	49	7	Very Fine	30.133	41	41	—	Foggy
S.	20	—.097	43	43	—	Ditto	—.036	57	50	7	Fine	—.052	51	51	—	Fine
M.	21	—.048	54	54	—	Hazy	—.068	57	57	—	Hazy	—.075	52	52	—	Ditto
⊙ T.	22	—.148	53	53	—	Drizzly	—.133	56	54	2	Ditto	—.106	52	52	—	Very Fine
W.	23	—.090	52	52	—	Ditto	—.069	55	55	—	Drizzly	—.062	53	53	—	Rain
Th.	24	—.032	50	50	—	Rain	—.045	54	54	—	Rain	—.131	52	52	—	Ditto
F.	25	—.252	48	48	—	Overcast	—.289	54	48	6	Overcast	—.358	45	45	—	Fine
S.	26	—.338	43	43	—	Clear	—.208	52	48	4	Fine	—.333	44	42	2	Ditto
S.	27	—.296	43	40	3	Ditto	—.264	50	43	7	Ditto	—.247	41	41	—	Clear
M.	28	—.322	41	41	—	Ditto	—.352	46	46	—	Cold, Showery	—.480	41	41	—	Stormy Showers
☾ T.	29	—.446	41	41	—	Clear & Cold	—.330	45	45	—	Cold Haze	—.222	40	40	—	Ditto
W.	30	—.161	41	41	—	Hazy & Ditto	—.102	47	41	6	Cloudy& Cold	—.038	40	35	5	Boisterous
Th.	31	29.974	39	39	—	Drizzly	29.929	39	39	—	Rain	29.853	40	40	—	Do. with Rain
		30.021	48.55	48.42	0.13		30.006	56.45	51.87	4.58		30.024	48.09	47.87	0.22	

NOVEMBER.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	45	42	45	40	E	Little		.14	The barometer averaged very low, whilst the amount of rain was nearly 2 inches above the usual quantity for this month; more indeed fell in this than in any corresponding month for the last 15 years. The temperature was 4° above the average. A sharp frost occurred on the 26th, followed by dense fog and very heavy rain on the 27th. With few exceptions the weather was calm. The 21st was stormy and wet; and it blew almost a hurricane for a few hours on the night of the 25th.
2	49	42	49	42	——	Strong		.30	
3	52	48	53	47	——	Little		.28	
4	42	39	58	38	——	Ditto		.11	
5	50	39	51	32	SW	Ditto		.01	
6	51	45	52	43	W	Ditto		.09	
7	51	47	51	42	E	Ditto		.10	
8	55	46	57	41	S	Ditto		.05	
9	55	50	57	48	SE	Ditto		.01	
10	56	50	56	50	S	Ditto		·55	Mean Pressure from the 3 daily observations 29.695 inches
11	55	38	59	29	SW	Ditto			—— Temperature.....Ditto..... 46°.82
12	55	43	56	37	E	Ditto			—— Dew Point.....Ditto..... 46°.35
13	51	43	51	37	——	Ditto			—— Degree of Dryness.....Ditto..... 0°.47
14	55	49	55	48	SE	Ditto		.04	—— Degree of Moisture.....Ditto..... .987
15	56	46	56	42	S	Ditto		.04	—— Force of Vapour.....Ditto..... .356 inch.
16	56	48	61	43	——	Ditto			Least observed degree of Moisture..... .734
17	57	51	59	50	——	Ditto		.26	Maximum Temperature in the Shade..... 56°.
18	57	43	60	36	SW	Ditto		.36	Minimum Temperature in ditto.. ..... 21°.
19	55	38	57	33	——	Ditto		.08	Maximum Temperature in the Sun..... 61°.
20	55	29	53	24	NW	Ditto			Minimum of Terrestrial Radiation..... 15°.
21	48	36	49	30	NE	Brisk		.32	Mean Temperature of External Air..... 45°.56
22	48	30	55	23	——	Little			
23	46	30	48	26	——	Ditto		.05	
24	54	40	55	39	NW	Ditto		.01	
25	56	36	58	32	SW	Ditto		.12	
26	46	21	50	15	W	Ditto			
27	36	32	36	30	NE	Ditto		.88	
28	41	32	41	30	SE	Ditto		.06	
29	51	41	47	35	——	Ditto		.37	
30	48	28	48	23	S	Ditto		.04	
	51.06	40.06	52.76	36.16				4.37	

WINDS.

North.....	0 days	N. East.....	4 days
South	6 ..	S. East.....	4 ..
East	7 ..	N. West	2 ..
West	2 .	S. West	5 ..

30 days.

Amount of Rain .....4.37 inches.

NOVEMBER.

		Morning.					Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
F.	1	29.730	42	42	—	Hazy	29.677	44	44	—	Hazy	29.677	42	42	—	Rain
S.	2	—.641	43	43	—	Rain	—.585	45	45	—	Rain	—.585	42	42	—	Foggy
S.	3	—.629	48	48	—	Foggy	—.593	45	45	—	Ditto	—.518	50	50	—	Rain
M.	4	—.503	52	52	—	Hazy	—.503	51	51	—	Hazy	—.533	45	45	—	Ditto
T.	5	—.599	49	49	—	Rain	—.650	59	50	9	Fine	—.768	46	46	—	Hazy
● W.	6	—.763	44	44	—	Hazy	—.659	53	45	8	Cloudy	—.711	45	45	—	Ditto
Th.	7	—.608	49	49	—	Rain	—.621	52	52	—	Foggy	—.681	50	50	—	Overcast
F.	8	—.693	48	48	—	Hazy	—.699	54	54	—	Rain	—.623	48	48	—	Rain
S.	9	—.507	47	47	—	Slightly overcast	—.461	56	53	3	Fine	—.446	52	52	—	Drizzly
S.	10	—.381	53	53	—	Rain	—.255	54	54	—	Rain	28.978	52	52	—	Rain
M.	11	—.253	40	40	—	Fine	—.262	52	52	—	Fine	29.409	45	45	—	Clear
T.	12	—.411	46	46	—	Hazy	—.451	54	54	—	Overcast	—.579	48	48	—	Hazy
W.	13	—.739	49	49	—	Ditto	—.804	51	51	—	Hazy	—.944	46	46	—	Fine
☽ Th.	14	—.984	45	45	—	Fine	—.982	52	52	—	Ditto	—.939	49	49	—	Rain
F.	15	—.978	52	52	—	Hazy	—.933	55	55	—	Ditto	—.824	52	52	—	Ditto
S.	16	—.876	52	52	—	Ditto	—.872	56	52	4	Fine	—.993	50	50	—	Clear & Fine
S.	17	30.029	52	52	—	Ditto	30.014	53	53	—	Drizzly	—.998	51	51	—	Rain
M.	18	29.983	55	55	—	Heavy Rain	—.280	55	55	—	Heavy rain	—.989	50	50	—	Clearing
T.	19	—.985	46	46	—	Damp	29.948	53	50	3	Clear & Fine	—.955	49	49	—	Fine
W.	20	30.150	42	42	—	Fine	30.083	49	43	6	Ditto	—.990	38	38	—	Clear
○ Th.	21	29.400	44	44	—	Stormy & Wet	29.468	44	44	—	Drizzly	—.700	40	40	—	Ditto
F.	22	—.907	41	41	—	Overcast	—.975	45	42	3	Fine	30.152	37	37	—	Ditto
S.	23	30.227	33	33	—	Clear	30.150	44	40	4	Clear	—.272	36	36	—	Fine
S.	24	—.151	40	40	—	Rain	—.080	53	53	—	Drizzly	29.826	50	50	—	Rain
M.	25	29.675	53	53	—	Cloudy	29.614	55	55	—	Dense Clouds	—.233	51	51	—	Cloudy
T.	26	—.432	39	39	—	Clearing	—.414	45	45	—	Fine	—.410	34	34	—	Clear
☾ W.	27	—.420	26	26	—	Frosty and Foggy	—.464	33	33	—	Dense Fog	—.538	34	34	—	Heavy Rain
Th.	28	—.569	38	38	—	Hazy	—.584	43	43	—	Hazy	—.575	38	38	—	Damp
F.	29	—.298	44	44	—	Heavy Rain	—.202	47	47	—	Heavy rain	—.159	48	48	—	Heavy Rain
S.	30	—.621	43	40	3	Fine	—.651	48	48	—	Overcast	—.665	48	48	—	Heavy showers
		29.701	45.16	45.06	0.09		29.696	49.99	48.66	1.33		29.689	45.33	45.33	0.0	

DECEMBER.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	41	29	48	23	SE	Little			This month did not fall short of its dreary character. Very little rain fell previously to the 11th; but up to that time, and frequently throughout, dense fogs were prevalent, with occasional frosts. Between the 11th and 27th, there were only four dry days, and altogether there fell upwards of half an inch more than the average. The air was almost constantly in a state of saturation. The temperature was about an average. The 24th was very boisterous, and a sharp frost occurred on the 29th.
2	42	33	42	31	NW	Ditto			
3	39	27	41	21	SW	Ditto			
4	38	30	39	24	N	Ditto			
5	37	28	38	26	NW	Ditto			
6	37	32	39	31	S	Ditto		.01	
7	42	28	44	19	SE	Ditto			
8	35	31	36	29	E	Ditto			
9	37	32	38	29	NE	Ditto			
10	42	34	43	31	E	Ditto			
11	46	39	45	31	SE	Ditto		.09	Mean Pressure from the 3 daily observations 29.735 inches.
12	48	35	48	30	S	Brisk		.10	—— Temperature .....Ditto..... 40°.55
13	48	42	48	39	——	Little		.16	—— Dew Point .....Ditto..... 39°.98
14	49	30	50	26	SW	Ditto			—— Degree of Dryness .....Ditto..... 0°.57
15	43	41	43	40	SE	Ditto		.09	—— Degree of Moisture .....Ditto..... .972
16	44	30	50	28	——	Ditto			—— Force of Vapour.....Ditto..... .278 inch.
17	44	31	53	27	——	Ditto		.28	Least observed degree of Moisture ..... .772
18	42	41	42	40	——	Ditto			Maximum Temperature in the Shade..... 57.°
19	55	50	55	48	S	Ditto		.27	Minimum Temperature in ditto..... 21.°
20	55	46	55	42	——	Ditto		.06	Maximum Temperature in the Sun..... 57.°
21	53	46	54	45	SW	Ditto		.20	Minimum of Terrestrial Radiation..... 15.°
22	55	47	53	44	——	Ditto		.06	Mean Temperature of External Air..... 40°.30
23	57	48	57	48	S	Ditto		.47	
24	54	44	54	39	SW	Brisk		.01	
25	48	28	49	26	W	Little			
26	54	38	54	36	E	Ditto		.39	
27	46	29	46	25	NW	Ditto		.13	
28	39	24	43	15	W	Ditto			
29	40	21	43	15	——	Ditto			
30	44	34	44	33	SE	Ditto			
31	52	45	54	43	S	Ditto			
	45.35	35.25	46.70	31.74			2.32		

WINDS.

North	1 day	N. East	2 days
South	7 ..	S. East	8 ..
East	3 ..	N. West	2 ..
West	3 ..	S. West	5 ..

31 days.

Amount of Rain .....2.32 inch.

DECEMBER.

		Morning.					Noon.					Night.				
1839.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	29.724	30	30	—	Frosty&Foggy	29.732	41	41	—	Dense Fog	29.810	33	33	—	Dense Fog
M.	2	—.890	38	38	—	Dense Fog	—.992	41	41	—	Ditto	—.981	35	35	—	Foggy
T.	3	—.985	36	36	—	Foggy	—.966	35	35	—	Ditto	—.962	31	31	—	Ditto
W.	4	—.884	31	31	—	Frosty	—.835	39	37	2	Fine	—.963	31	31	—	Overcast
Th.	5	30.124	35	32	3	Slight Haze	30.181	47	41	6	Ditto	30.487	34	34	—	Drizzly
● F.	6	—.508	36	36	—	Foggy	—.397	36	36	—	Foggy	—.404	36	36	—	Foggy
S.	7	—.366	35	35	—	Dense Fog	—.333	41	35	6	Fine	—.239	31	31	—	Frosty
S.	8	—.124	34	32	2	Hazy	—.070	36	36	—	Hazy	—.014	32	32	—	Overcast
M.	9	29.860	34	34	—	Ditto	29.800	36	36	—	Ditto	29.712	32	32	—	Ditto
T.	10	—.651	34	34	—	Ditto	—.628	39	35	4	Ditto	—.637	36	36	—	Foggy
W.	11	—.598	40	40	—	Fine	—.490	44	44	—	Hazy	—.326	46	46	—	Rain
Th.	12	—.286	45	45	—	Cloudy; windy	—.190	48	48	—	Cloudy	—.252	41	41	—	Cloudy
☽ F.	13	—.311	39	39	—	Fine	—.303	47	47	—	Overcast	—.277	41	41	—	Heavy Rain
S.	14	—.247	42	42	—	Rain	—.288	46	42	4	Fine	—.400	43	43	—	Clear & Fine
S.	15	—.596	32	32	—	Frosty Haze	—.586	42	42	—	Hazy	—.427	44	44	—	Hazy, Rain
M.	16	—.713	39	39	—	Hazy	—.820	41	41	—	Ditto	30.083	37	37	—	Fine
T.	17	30.094	34	34	—	Fine	30.030	42	42	—	Ditto	29.868	36	36	—	Overcast
W.	18	29.530	35	32	3	Dry Haze	29.461	40	36	4	Dry Haze	—.376	41	41	—	Rain
Th.	19	—.422	48	48	—	Cloudy	—.426	52	52	—	Cloudy	—.356	50	50	—	Ditto
○ F.	20	—.306	51	51	—	Heavy Rain	—.262	55	55	—	Rain	—.480	49	49	—	Fine
S.	21	—.566	46	46	—	Clear	—.564	50	50	—	Cloudy	—.561	52	52	—	Rain
S.	22	—.547	50	50	—	Drizzly	—.487	52	52	—	Rain	—.376	52	52	—	Fine
M.	23	—.586	48	46	2	Fine [rain	—.561	52	52	—	Ditto	—.333	54	54	—	Rain
T.	24	—.336	56	56	—	Boisterous,	—.302	52	47	5	Fine	—.416	49	49	—	Ditto
W.	25	—.530	45	44	1	Fine [Foggy	—.545	46	39	7	Very Fine	—.568	36	35	1	Clear
Th.	26	—.728	32	32	—	Frosty and	—.599	39	39	—	Rain	—.322	41	41	—	Rain
☾ F.	27	—.386	44	44	—	Rain	—.456	45	45	—	Hazy	—.577	40	40	—	Hazy
S.	28	—.759	32	32	—	Slight Frost	—.826	43	43	—	Fine	30.062	29	29	—	Clearing
S.	29	30.320	28	28	—	Clear & Frosty	30.333	38	35	3	Clear	—.440	29	29	—	Frosty
M.	30	—.436	27	27	—	Frosty and Foggy	—.374	36	36	—	Hazy	—.163	37	37	—	Overcast
T.	31	29.975	44	44	—	Overcast	29.884	46	46	—	Fine	29.727	47	47	—	Ditto
		29.748	38.70	38.35	0.35		29.733	43.45	42.13	1.32		29.726	39.51	39.48	0.03	

DECEMBER.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	41	29	48	23	SE	Little			
2	42	33	42	31	NW	Ditto			
3	39	27	41	21	SW	Ditto			
4	38	30	39	24	N	Ditto			
5	37	28	38	26	NW	Ditto			
6	37	32	39	31	S	Ditto		.01	
7	42	28	44	19	SE	Ditto			
8	35	31	36	29	E	Ditto			
9	37	32	38	29	NE	Ditto			
10	42	34	43	31	E	Ditto			
11	46	39	45	31	SE	Ditto		.09	
12	48	35	48	30	S	Brisk		.10	
13	48	42	48	39	——	Little		.16	
14	49	30	50	26	SW	Ditto			
15	43	41	43	40	SE	Ditto		.09	
16	44	30	50	28	——	Ditto			
17	44	31	53	27	——	Ditto		.28	
18	42	41	42	40	——	Ditto			
19	55	50	55	48	S	Ditto		.27	
20	55	46	55	42	——	Ditto		.06	
21	53	46	54	45	SW	Ditto		.20	
22	55	47	53	44	——	Ditto		.06	
23	57	48	57	48	S	Ditto		.47	
24	54	44	54	39	SW	Brisk		.01	
25	48	28	49	26	W	Little			
26	54	38	54	36	E	Ditto		.39	
27	46	29	46	25	NW	Ditto		.13	
28	39	24	43	15	W	Ditto			
29	40	21	43	15	——	Ditto			
30	44	34	44	33	SE	Ditto			
31	52	45	54	43	S	Ditto			
	45·35	35·25	46·70	31·74				2.32	

This month did not fall short of its dreary character. Very little rain fell previously to the 11th; but up to that time, and frequently throughout, dense fogs were prevalent, with occasional frosts. Between the 11th and 27th, there were only four dry days, and altogether there fell upwards of half an inch more than the average. The air was almost constantly in a state of saturation. The temperature was about an average. The 24th was very boisterous, and a sharp frost occurred on the 29th.

Mean Pressure from the 3 daily observations 29.735 inches.
—— Temperature .....Ditto..... 40°.55
—— Dew Point .....Ditto..... 39°.98
—— Degree of Dryness .....Ditto..... 0°.57
—— Degree of Moisture .....Ditto..... .972
—— Force of Vapour.....Ditto..... .278 inch.
Least observed degree of Moisture ..... .772
Maximum Temperature in the Shade..... 57.°
Minimum Temperature in ditto..... 21.°
Maximum Temperature in the Sun..... 57.°
Minimum of Terrestrial Radiation..... 15.°
Mean Temperature of External Air..... 40°.30

WINDS.

North	1 day	N. East	2 days
South	7 ..	S. East	8 ..
East	3 ..	N. West	2 ..
West	3 ..	S. West	5 ..

31 days.

Amount of Rain .....2.32 inch.

Monthly Mean Pressure, Temperature, and Dew Point, &c. of 1839; deduced from the Observations recorded in the preceding Journal.

1839.	Pressure.								Temperature.												
					Mean at				In the Shade.			Mean at				In Sun's Rays.		Terrestrial Radiation		
Months.	Max.	Min.	Med.	Range of Barom.	Morn.	Noon.	Night.	Mean of the three Observations.	Max.	Min.	Med.	Morn.	Noon.	Night.	Mean of the three Observ^{s}	Max.	Min.	Max.	Min.	Med. of Sun and Rad^{n}.
Jan. .	30.573	29.039	29.918	1.534	29.938	29.898	29.914	29.916	53	17	37.85	35.93	41.19	36.80	37.97	59	38	50	11	38.58
Feb. .	30.559	29.467	30.001	1.092	29.990	29.998	30.009	29.999	53	20	40.40	37.46	44.71	38.92	40.36	71	40	47	14	42.28
March	30.238	29.261	29.821	0.977	29.824	29.817	29.829	29.823	58	20	41.95	39.51	46.09	39.51	41.70	72	39	44	9	49.77
April	30.550	29.409	30.094	1.141	30.090	30.086	30.105	30.094	73	24	44.44	44.00	50.16	41.00	45.05	96	36	45	13	47.98
May .	30.248	29.357	29.978	0.891	29.983	29.962	29.978	29.974	73	28	52.45	51.48	61.90	48.55	53.97	96	62	52	19	58.90
June.	30.291	29.409	29.904	0.882	29.904	29.889	29.922	29.905	84	40	60.16	61.53	69.10	57.26	62.63	110	67	55	34	68.08
July .	30.304	29.298	29.913	1.006	29.917	29.906	29.910	29.911	81	45	61.74	63.70	69.87	59.29	64.28	101	67	60	40	61.67
Aug.	30.325	29.172	30.003	1.153	30.007	29.997	30.005	30.003	85	37	61.41	60.58	68.51	58.35	62.48	104	63	56	29	67.01
Sept.	30.131	29.061	29.677	1.070	29.661	29.673	29.693	29.679	78	36	57.71	55.93	63.56	54.46	57.98	93	65	57	33	61.06
Oct. .	30.480	29.447	30.017	1.033	30.021	30.006	30.024	30.017	71	35	51.40	48.55	56.45	48.09	51.03	83	42	55	28	53.30
Nov..	30.272	28.978	29.699	1.294	29.701	29.696	29.689	29.695	56	21	45.56	45.16	49.99	45.33	46.82	61	36	50	15	44.46
Dec. .	30.508	29.190	29.738	1.318	29.748	29.733	29.726	29.735	57	21	40.30	38.70	43.45	39.51	40.55	57	36	45	15	39.22
Aver.	30.373	29.257	29.896	1.116	29.898	29.888	29.900	29.895	68.50	28.66	49.61	48.54	55.41	47.25	50.40	83.58	49.25	51.33	21.66	52.69

1839.	Hygrometer indicating Dew Point.								Scale of the Winds.									Rain.	
	Mean Dew Point at			Mean Dew Point.	Mean Force of Vapour.	Mean degree of Dryness.	Mean degree of Moisture.	Least degree of Moisture.											
Months.	Morn.	Noon.	Night.						N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Days.	In.	Pts.
Jan. .	35.19	38.74	36.74	36.89	.253	1.08	962	676	1	3	0	1	1	5	10	10	31	1	27
Feb. .	36.78	41.40	38.78	38.99	.272	1.37	957	634	1	3	0	2	2	6	11	3	28	2	19
March	38.03	39.55	39.09	38.89	.271	2.81	903	488	1	8	2	5	1	6	5	3	31	1	95
April	39.90	39.80	40.27	39.99	.280	5.06	823	478	2	6	9	1	1	4	4	3	30	1	46
May .	45.39	46.42	46.74	46.18	.352	7.79	766	346	5	10	5	0	4	2	2	3	31	0	82
June.	58.57	60.10	56.36	58.34	.531	4.29	874	519	1	3	4	3	8	8	2	1	30	3	00
July .	59.64	60.80	58.39	59.61	.553	4.67	862	401	0	4	1	0	8	15	2	1	31	2	92
Aug.	57.74	57.80	58.06	57.82	.522	4.61	864	457	2	2	1	0	3	8	8	7	31	1	85
Sept.	55.10	59.10	54.20	56.13	.494	1.75	941	610	1	0	1	1	11	13	3	0	30	3	92
Oct.	48.42	51.87	47.87	49.39	.392	1.64	946	714	2	6	2	4	12	2	2	1	31	2	23
Nov.	45.06	48.66	45.33	46.35	.356	0.47	987	734	0	4	7	4	6	5	2	2	30	4	37
Dec. .	38.35	42.13	39.48	39.98	.278	0.57	972	772	1	2	3	8	7	5	3	2	31	2	32
Aver.	46.51	48.86	46.77	47.38	.379	3.01	904	569	17	51	35	29	64	79	54	36	365	28	30

The preceding Table, as regards Temperature, and the Dew Point, is in terms of Fahrenheit's scale; the following are reductions of the same to those of the Centigrade and Reaumur's Thermometers.

Centigrade Thermometer.

1839.	Temperature.												Hygrometer indicating Dew Point.				
	In the Shade.			Mean at			Mean of the three Observations	In Sun's Rays.		Terrestrial Radiation.		Med. of Sun and Radiation.	Mean Dew Point at			Mean Dew Point.	Mean degree of Dryness.
Months.	Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.		Morn.	Noon.	Night.		
Jan. .	11.66	-8.33	3.25	2.18	5.10	2.66	3.31	15.00	3.33	10.00	-11.66	3.65	1.77	3.74	2.63	2.71	0.60
Feb. .	11.66	-6.66	4.66	3.03	7.06	3.84	4.64	21.66	4.44	8.33	-10.00	5.71	2.65	5.22	3.76	3.88	0.76
March	14.44	-6.66	5.52	4.17	7.82	4.17	5.38	22.22	3.88	6.66	-12.77	9.87	3.35	4.19	3.93	3.82	1.56
April	22.77	-4.44	6.91	6.66	10.08	5.00	7.25	35.55	2.22	7.22	-10.55	8.87	4.38	4.33	4.59	4.44	2.81
May .	22.77	-2.22	11.36	10.82	16.61	9.19	12.31	35.55	16.66	11.11	-7.22	14.94	7.43	7.90	8.18	7.87	4.32
June.	28.88	4.44	15.64	16.40	20.61	14.03	17.01	43.33	19.44	12.77	1.11	20.04	14.76	15.61	13.53	14.63	2.38
July .	27.22	7.22	16.52	17.61	21.03	15.16	17.93	38.33	19.44	15.55	4.44	16.48	15.35	16.00	14.66	15.33	2.59
Aug.	29.44	2.77	16.33	15.87	20.28	14.63	16.93	40.00	17.22	13.33	-1.66	19.45	14.30	14.33	14.47	14.34	2.56
Sept.	25.55	2.22	14.28	13.29	17.54	12.47	14.42	33.88	18.33	13.88	0.55	16.14	12.83	15.05	12.33	13.40	0.97
Oct. .	21.66	1.66	10.77	9.19	13.58	8.93	10.57	28.33	5.55	12.77	-2.22	11.83	9.12	11.03	8.81	9.66	0.91
Nov .	13.33	-6.11	7.53	7.31	10.00	7.40	8.23	16.11	2.22	10.00	-9.44	6.92	7.25	9.25	7.40	7.97	0.26
Dec. .	13.88	-6.11	4.61	3.72	6.36	4.17	4.75	13.88	2.22	7.22	-9.44	4.01	3.52	5.62	4.15	4.47	0.31
Aver.	20.27	-1.85	9.78	9.19	13.00	8.47	10.22	28.65	9.58	10.73	-5.71	11.49	8.06	9.36	8.20	8.54	1.67

Reaumur's Thermometer.

1839.	Temperature.												Hygrometer indicating Dew point.				
	In the shade.			Mean at			Mean of the three Obser-vations.	In Sun's Rays.		Terrestrial Radiation.		Med. of Sun and Radia-tion.	Mean Dew Point at			Mean Dew Point.	Mean degree of dry-ness.
Months.	Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.		Morn.	Noon.	Night.		
Jan. .	9.33	-6.66	2.59	1.74	4.08	2.12	2.65	12.00	2.66	8.00	-9.33	2.91	1.41	2.98	2.09	2.16	0.47
Feb. .	9.33	-5.33	3.72	2.42	5.64	3.06	3.71	17.33	3.55	6.66	-8.00	4.56	2.11	4.17	3.00	3.10	0.60
March.	11.55	-5.33	4.42	3.15	6.26	3.33	4.31	17.77	3.11	5.33	-10.22	7.89	2.67	3.35	3.15	3.05	1.24
April.	18.22	-3.55	5.52	5.33	8.07	4.00	5.79	28.44	1.77	5.77	-8.44	7.09	3.51	3.46	3.67	3.55	2.24
May .	18.22	-1.77	9.08	8.65	13.28	7.35	9.76	28.44	13.33	8.88	-5.77	11.95	5.94	6.40	6.54	6.30	3.46
June.	23.11	3.55	12.51	13.11	16.48	11.22	13.61	34.66	15.55	10.22	0.88	16.03	11.80	12.48	10.82	11.70	1.89
July .	21.77	5.77	13.20	14.08	16.82	12.12	14.31	30.66	15.55	12.44	3.55	13.17	12.28	12.79	11.72	12.27	2.06
Aug.	23.55	2.22	13 06	12.69	16·22	11.70	13.54	32.00	13.77	10.66	-1.33	15.55	11.43	11.46	11.57	11.47	2.04
Sept.	20.44	1.77	11.42	10.63	14.01	9.97	11.54	27.11	14.66	11.11	0.44	12.90	10.26	12.04	9.85	10.71	0.77
Oct. .	17.33	1.33	8.61	7.35	10.86	7.15	8.45	22.66	4.44	10.22	-1.77	9.46	7.29	8.82	7.04	7.72	0.72
Nov.	10.66	-4.88	6.01	5.84	7.99	5.91	6.58	12.88	1.77	8.00	-7.55	5.33	5.79	7.40	6.11	6.37	0.20
Dec. .	11.11	-4.88	3.68	2.97	5.08	3.33	3.79	11.11	1.77	5.77	-7.55	3.20	2.81	4.49	3.32	3.54	0.25
Aver.	16.22	-1.48	7.82	7.33	10.40	6.77	8.17	22.92	7.66	8.59	-4.59	9.18	6.44	7.49	6.57	6.83	1.33

XLVIII. *Note upon Achimenes longiflora, a new plant from Guatemala.* *By* Mr. Robert Fortune ; *Superintendent of the Hothouse Department of the Society's Garden.*

Read November 2, 1841.

Botanists have long been aware that there exists in Mexico and other parts of central America a beautiful race of Gesneraceous plants, to which this individual belongs, but with the exception of Achimenes coccinea, a native of Jamaica, perhaps better known as Cyrilla pulchella, none of them have ever found their way into English gardens. The Horticultural Society, has however now been fortunate enough to introduce two other species, Achimenes longiflora and A. rosea, through their collector Mr. Hartweg : both of them beautiful plants but the former particularly so ; and therefore some account of it may be interesting to the Fellows of the Society.

Mr. Hartweg found it growing wild in the ravines of Guatemala, and sent its roots home last spring along with several other new Gesneraceous and Orchidaceous plants. The roots arrived in very good order, owing to their having been packed in dry loam, and sent home at that period of the year when the plant is naturally in a resting state. In packing and sending home plants of this kind, much of the success depends upon having them gathered and transmitted at the proper season. In this case the roots being gathered after the growing season was past, and at the same time surrounded with dry loam, were as nearly as possible in natural circumstances, during the voyage to England, were only enjoying that period of rest which they would have had in their native country, and, as the event proved, were as ready to

Achimenes longiflora

start into leaf, and to grow with vigour after their arrival as if they had remained in Guatemala.

The stems of Achimenes longiflora are of two kinds, some creeping along the ground and amongst the soil, and forming fibrous roots and numerous imbricated buds resembling scaly bulbs; others growing in an upright position from a foot to two feet in height, branching and covered with short spreading hairs. The leaves are hairy, generally opposite and in pairs, but on young shoots are frequently in whorls of three and sometimes alternate; they are oblong, pointed, and serrated, green above, but tinged with red on the under side when fully grown. The flowers grow singly from the axils of the leaves; the peduncles are about half an inch in length; the lobes of the calyx are green, oblong, pointed, and persistent. The tube of the corolla is about two inches long and the border nearly two inches and a half in diameter, 5-lobed and nearly round, having much the outline of a good heartsease. The tube is of a dark cream colour, the border purple or deep blue changing into lilac. The style and stamens are about the length of the tube, but the latter are apparently much shorter, owing to their being spirally curved at their base.

It proves to be a plant of the easiest cultivation, flowering in August and continuing covered with large violet flowers for three or four months. It seems to flourish in any free soil, and is more easily propagated than any plant with which I am acquainted. In the spring when it begins to grow this can be done by separating and potting the scaly bulbs described above; afterwards its creeping stems will strike their roots into the soil and can be taken off perfect plants; and at all times, while the plant is growing, cuttings may be struck in a few days.

Every one who has a warm greenhouse or cucumber or melon frame to start it in, and enable it to form its flower buds in summer, may have it in full bloom in the common greenhouse or sitting room in autumn. The lovers of drawing-room plants may intro-

duce it there and grow it as easily as they now do the Achimenes coccinea. Those who have sufficient accommodation may produce a fine effect by planting a quantity of the roots in a large flat box, and so forming a bed of flowers, which will contrast beautifully with the green foliage of the surrounding plants.

After the flowering season is past the stems die off and the roots require no more care than keeping perfectly dry and free from frost during the winter. When spring comes round and the plant shews signs of growth it must be repotted, at the same time removing some of the old soil and dividing the roots, where they seem to be sending up too many young stems for the size of the pot. To the successful cultivators of Achimenes coccinea it will be enough to say that A. longiflora requires very nearly the same treatment; and those who are not acquainted with that plant may easily manage this by attending to the directions already given. When we consider that its cultivation is of the easiest kind, and that its flowers are large, beautiful, and produced in succession for several months together, it is not too much to say that it is one of the finest of Mr. Hartweg's importations.

XLIX. *On a System of Pruning Fruit Trees. In a Letter to the Secretary. By* Mr. Henry Crace.

Read November 2, 1841.

Sir,

Allow me to draw the attention of the Society to a system of pruning fruit trees, which I have adopted for some years; and as experience has shewn, with, I think, complete success.

My object was to regenerate a tree, (if I may so express myself); that is to say to make the old branches which have become barren, reproduce bloom-buds, even down to within a few inches of the graft; and I have so far succeeded, as to have fruit at this moment hanging on wood which had ceased bearing at least twenty years.

I should premise that I have resided for twelve years, on land, the natural soil of which was about nine inches, with a subsoil of an inveterately strong clay.

My first operation in taking this brick field, (for such it was), was to cut trenches twelve inches deep in the clay, and to fill them up with brick drains, three inches broad; these I repeated every fifteen feet across my garden; conducting them into a tank. My next point was to cover the ground with lime rubbish, and street sweepings; and to trench the whole to the depth of the good soil. (I have subsequently been adding thus to the soil annually with a plentiful supply of stable dung, so that at present I have upwards of two feet of good soil.) I then planted my trees *on* my ground, not *in* it, as is customary, by raising small hillocks, and placing the trees upon them.

I next fastened down the larger roots of the larger trees, with small wooden pegs, to prevent irritation from the action of the

wind; and I covered them with earth; so that most of my trees were upwards of a foot above the face of the Garden: and the centre of the roots was filled up with earth. I must draw the attention of the young planter to this last and very material point; because in most cases the centre is left without earth, which prevents fibrous roots forming round the stem.

From the nature of the soil, my trees have always had a tendency to luxuriant growth, which I annually check, by cutting the roots, to within two or three feet of the stem, according to the size of the plant: but I endeavour each year to cut about one inch longer, by which treatment all my trees are without rank roots; and I am perfectly satisfied that, by suffering only fibrous ones to exist, you have a greater quantity of blossom-buds produced.

These observations I have made in order that no brother gardener may be led into error by adopting the plan I am about to lay before you, without taking previously the necessary precautions to have his trees in a proper state of cultivation.

To commence with Apple and Pear trees. My first operation is about the month of June, when the sap is rising rapidly through the tree, to nip off the young shoot, to about six inches in length, (the spring shoots at this period being about twelve inches long.) This instantly stops the consumption of sap, which is in consequence forced to the dormant eyes, or buds, on the old wood; it is also, the means of ripening the young shoots much sooner: and it causes the bloom-buds immediately around the shoulder, to throw forth foliage; consequently bringing to maturity numberless blossom eyes, otherwise dormant. This is strongly exemplified at the present moment: for the upper leaves are beginning to fall, while those around the shoulder, are quite firm.

When the trees make their Midsummer shoots, the cut branches again throw forth their young wood, from the upper eyes; and in case they are strong, I again nip them off.

As the fruit becomes ripe and gathered, I commence my autumn

pruning, by cutting off all my shoots, to within a half an inch of the shoulder, taking care not to injure the leaves beneath; thus although the whole of my trees are now pruned, I have nearly every one covered with foliage. I leave the top shoots uncut until the winter; when I again train every tree, with tar-cord, raising the tie a few inches annually; and although my trees have been twelve years planted, I have a large quantity of them not more than three or four feet high.

I have within the last year or two applied this system to my Plums and Cherries, and most effectually to Currants and Gooseberries; in fact I think it will apply to all fruits, except Peaches and Nectarines on the walls. With these I am very cautious; selecting only the most succulent; but by stopping them you throw strength into the lower shoots.

Possibly there may be persons doubtful of the advantage arising from this new treatment of fruit trees; but to the most sceptical I shall be happy to show its effects: and should it prove advantageous to Horticulture, I shall be highly gratified in being the means of introducing it.

There is one material precaution which I ought to mention with reference to cutting the roots. This operation is generally performed with the spade, when the root is left with a bruised, or ragged end. I always cut the roots clean with my knife; taking the cut in a slanting direction three or four inches long on the under side of the root; by which means I have a greater surface to throw out fibrous roots: and on opening ground around some of the trees, I find a complete fan formed with the young fibres.

I am, Sir,

Your most obedient servant,

Henry Crace.

Lennard Place, St. John's Wood,
October 18, 1841.

[*Note by the Vice Secretary.* In consequence of an invitation from Mr. Crace I inspected the trees to which the foregoing communication relates ; and I am happy to bear my testimony to their excellent condition, which I found to be exactly what the author represents.]

L. *Experiments upon the effects of Kyanized Wood, and Mercurial Vapour upon Plants.* *By* Mr. Robert Fortune; *Superintendent of the Hothouse Department of the Society's Garden.*

A great deal having been said about the injurious effects of Kyanized wood when used in the construction of hothouses and frames, it became a subject of horticultural interest to ascertain how far these opinions are correct and what is the nature of the effects actually produced. Several experiments were, therefore, commenced in the garden of the Society, of which the following is a brief account.

In the latter end of March, 1838, two long boxes made upon the principle, and after the manner of Mr. Ward's cases, were prepared for the experiment. One was made of wood that had been steeped in Kyan's tanks, the material out of which the other was prepared had not been subjected to this process. They were filled with the same kind of soil and the plants put into each were as near as possible alike. Each box contained twelve plants, and those selected for the experiment were of different constitutions and habits: some of them being young and more likely to be affected by deleterious matter than others which were old and more robust. Both boxes after planting were well watered, and the tops which fitted very close were placed upon each. They were then set in an open situation fully exposed to the sun and never opened to admit any fresh air.

After having been in this situation for six months, and examined frequently during that period, it was found that the plants treated in this manner did not succeed well in either box, but that those in the Kyanized one did quite as well as those in the other. It

should be stated, however, that both boxes were painted, and, therefore, this circumstance might help to preserve the plants in the Kyanized box.

In the month of June in the same year, some Kyanized wood free from paint was put amongst the stems and leaves of Calandrinia discolor, and a common Pelargonium, and then covered with hand-glasses. At the same time hand-glasses were put over an equal number of plants of the same description which grew side by side with the others. After growing in these circumstances for three months, it did not appear that the Kyanized wood had produced any bad effects—the plants grew freely in both places and the Calandrinia ripened its seed as freely in the one place as in the other.

It seemed plain from these experiments, that wood dipped in Kyan's tanks produced no injurious effects upon plants in a dry and cool atmosphere; but there was no reason to conclude that it would be equally harmless in a warm and moist one, because if any chemical action took place it was more likely to do so in the latter case than in the former. To prove whether or not this opinion was correct, some plants capable of standing a very high temperature were put under a hand-glass in the stove and several pieces of Kyanized wood introduced amongst them. This wood was kept moist by means of a small hole in the top of the hand-glass, but the glass itself was never taken off for this purpose. In about three weeks the effect produced was very different here from that out of doors—the plants without exception began to look sickly, those leaves which accidentally came in contact with the wood became yellow and soon withered, and a fine vigorous specimen of the sensitive plant was killed. The wood was then taken out, the plants top-dressed and the hand-glass well washed. All the apparatus was put back in the same place, the wood excepted, when the sickly plants gradually recovered, their new leaves were fresh and greenand were not injured as they had been before.

Some farther experiments were commenced on the 1st of April in the present year to ascertain what effects mercurial vapour and weak muriatic acid would produce upon balsams. Seven hand-glasses with moveable tops were placed side by side in the pit of a moist stove and numbered from 1 to 7 inclusive. Seven balsams of the same size, and equally healthy, were placed, below them, one in each. A small pan was then put under each glass to receive the chemical preparations, and the whole being ready, the following substances were put into them—

No. 1. Half an ounce of mercury.
2. Half an ounce of corrosive sublimate, mixed with wet saw dust.
3. Was left in its natural state.
4. Weak muriatic acid.
5. Half an ounce of dry calomel.
6. Half an ounce of dry corrosive sublimate.
7. Moistened shavings of Kyanized wood.

The following table of observations will shew which of the substances proved injurious or otherwise, and the manner in which the plants were affected. They were examined daily, but remarks in the table were made only when the effects were particularly apparent.

TABLE SHEWING THE EFFECTS OF THE DIFFERENT SUBSTANCES.

April 1st.	1. ½ oz. of Mercury.	2. ½ oz. of Corr. Sub. mixed with wet Saw dust.	3.	4. Weak Muriatic Acid.	5. ½ oz. of dry Calomel.	6. ½ oz. of Dry Corrosive Sublimate.	7. Shavings of Kyanized wood moist.
5th.	The points of the leaves are changing to brown.						
7th.	Continues to suffer, leaves curling backwards. The weeds not looking well.						
12th.	Gets gradually worse, leaves drop off.	Not looking healthy, leaves beginning to curl.	Gets drawn up but is perfectly healthy.	Seems to grow better than the others, the weeds are remarkably healthy.		No weeds growing in the pot, but the balsam cannot be said to be affected yet.	The leaves curling a little, and looking very like No. 2.
15th.	Has now lost all its leaves and is nearly dead. Removed to No. 4, another plant introduced.			Both the plant and weeds more healthy than any of the others. The sickly plant from No. 1. brought here.			
23rd.	No effects visible upon this 2nd plant.	Leaves turning brown and evidently suffering.					Exactly like plant in No. 2.—leaves much curled and brown.
May 3.	2nd plant evidently suffering in the same manner and from the same cause as the 1st.	Gets gradually worse, leaves curl at the edges, turn yellow and finally drop off.		The sickly plant from No. 1, begins already to look better.	This cannot be said to be affected yet.		Continues to get worse. This and No. 2, evidently suffering from the same cause.
15th.	Has now lost all its leaves and is very unhealthy.	Removed with scarcely a leaf upon it to No. 6. Another introduced.		Sickly plant from No. 7. brought here.		It now appears to suffer a little. Plant from No. 2, brought here in a sickly state.	Removed in the same state as No. 2, to No. 4. Another healthy plant introduced.
30th.	All but dead.	2nd plant suffering in the same manner as the first.		Sickly plant from No. 7, recovers rapidly, and that from No. 1, is now healthy.	It seems to suffer a little, but the effects are not of a decided character.	Evidently suffering from some cause, slowly. Sickly plant brought from No. 2, does not recover here.	2nd plant suffering a little, but not so rapidly as the first.
June 5.	Still lingers on but does not grow, and is in a dying state.	Continues to get worse, but the deleterious matter evidently not so strong as when first put in.	This plant has grown very well throughout. It has perfected its flower and seed and died like any other annual.	All the plants in this glass are now healthy and only suffering from being confined and crowded. The preparation in this has had a very marked effect.	The effects produced here may have been the result of close confinement.	Still slightly affected, rather more decided than No. 5. The sickly plant which was brought from No. 2, has never recovered and is now dead.	Presents the same marks of disease as the first plant, but affected more slowly. The injurious matter evidently gets weaker.

From this table it will be seen that the plant in No. 1, where the mercury was, became visibly affected on the 5th day, that in two days afterwards some weeds which vegetated in the soil also looked sickly, and that it gradually became worse up to the 15th, when it had lost all its leaves and was removed from under this hand-glass, and placed under No. 4, which contained the weak muriatic acid. This change of circumstances had a marked effect upon the sickly plant which now began gradually to recover, and on the 30th of May—about six weeks after its removal—it was perfectly healthy.

At the time that the last plant was removed from No. 1, namely, on the 15th of April, another healthy one was introduced, which suffered in the same manner, and lost all its leaves in nearly the same space of time.

In No. 2, where the corrosive sublimate and moistened sawdust were, no bad effects were visible until the 12th day, but at that time the leaves began to curl and look unhealthy, turning yellow and finally dropping off, so that on the 15th of May it was removed with scarcely a leaf remaining. Another healthy plant was then placed in the same circumstances, and suffered in the same manner, though not so rapidly as the first.

No. 3, had no preparation of any kind under the hand-glass, and the plant here continued to grow throughout the whole time of the experiment without suffering in any way further than getting drawn up and having its top injured by the pressure of the hand-glass.

No. 4. The diluted muriatic acid had a most beneficial effect upon the balsam in this hand-glass, it grew more luxuriantly than any of the others, and the weeds in the pot vegetated and flourished in a very remarkable manner. Further, as before remarked,—the sickly leafless plant brought here from No. 1, gradually recovered and was soon in a high state of health.

The plants in Nos. 5 and 6, where the dry calomel and dry corrosive sublimate were, did not seem to be at all affected until

about the 15th of June, and then only slightly, and if this was owing to the nature of these compounds, their action must have been very slow.

The shavings of Kyanized wood in No. 7, had a decided effect upon the plant. In twelve days this effect was apparent by the leaves curling at their edges and turning yellow, and on the 15th of May, about six weeks after it was placed in these circumstances, the plant was removed without a leaf and nearly dead. It was then put into No. 4, where the weak muriatic acid was, and in four weeks was perfectly recovered. Another healthy plant was placed in the glass out of which this was taken, and this also suffered in the same manner as the last, the only difference being that it was not affected so rapidly. This may easily be explained, as the matter which is injurious to vegetable life may in the course of time pass off, and that which is left may be too weak to be productive of any bad effects.

It is worthy of remark that all the substances which proved detrimental to the plants affected them in the same way, namely, by making the leaves curl at the edges and become dry and yellow.

In conclusion I will only mention two or three instances which have come under the observation of others who have used this kind of timbe A frame was made of this wood for the growth of melons in the garden of the Society, but it was found impossible to succeed with it. In the Gardeners' Magazine for Sept. 1839, Earl Manvers states, that he had some rafters " steeped in the solution at the strength of one gallon of corrosive sublimate to ten gallons of water," and that the effects upon vegetable life were of the most injurious kind, three fine healthy vines being killed and the health of the others very much affected. And finally, Messrs. Loddiges of Hackney, were induced to use it upon an extensive scale in rafters for their orchidaceous house, and for many other buildings in their extensive nursery, where its bad effects were soon

discernible, and if they had not been counteracted by painting over the wood, many of the valuable plants in that establishment would no doubt have been destroyed. In fact after the lapse of several years they are still obliged to paint frequently to prevent any bad effects.

From these experiments it seems that we may safely arrive at the following conclusions. 1st. That the vapours which arise from mercury in a warm and moist atmosphere are very injurious to the health of the plant with which they come in contact. 2nd. That muriatic acid has probably a contrary effect, because plants which were placed under the same circumstances otherwise were destroyed in mercurial vapour, while in the atmosphere of muriatic acid they grew with great luxuriance. 3rd. That corrosive sublimate mixed with moistened sawdust produces exactly the same bad effects as shavings of Kyanized wood, provided they are placed in the circumstances above described; that is to say in a warm and moist atmosphere.

LI. *Some account of the Ickworth Imperatrice Plum. By Mr.* Robert Thompson; *Superintendent of the Orchard and Kitchen Garden Department in the Society's Garden.*

Read November 2, 1841.

The Ickworth Imperatrice Plum, of which the accompanying drawing by Miss Drake is an excellent representation, was raised by the late Thomas Andrew Knight, Esq., to whom the world is indebted for so many valuable fruits, the result of his skill and perseverance. Some account of this variety, as well as of five others of the same parentage, is given by him in Vol. VI, p. 529, of the First Series of the Society's Transactions. It is there distinguished as No. 6; and under this designation a more especial account is given of it in Vol. I. p. 53, of the New Series. Subsequently, in 1832, cuttings of the variety, under the name of Ickworth Imperatrice, were sent by Mr. Knight to the Society. The fruit from a tree grafted with these, perfectly agreed with that produced on one previously received as the seedling No. 6; and it has been found to possess so much excellence as to be considered worthy of a drawing, especially as the rich tracing on its surface which constitutes its external distinguishing character, was not depicted in the plate in which the fruit was originally figured.

Its parentage on both sides possesses much merit, it having been raised from the Imperatrice Violette and pollen of Coe's Golden Drop. The fruit is middle-sized, or somewhat larger than its female parent, and obovate; the stalk is of medium length and thickness. The Skin is purple, richly traced, as if embroidered, with golden brown lines, some like straight pencillings radiating downwards from the insertion of the stalk, while others are wavy

The Coe's Golden Drop Plum

or disposed circularly. The Flesh is greenish amber, partly adhering to the stone, juicy and very rich when allowed to hang till it begins to shrivel and part from the tree. The stone is rather small. The tree is of a hardy vigorous growth, and appears likely to be an abundant bearer as a standard; the shoots, are glabrous; the leaves oval or obovate, crenated, smooth, shining, dark green. The fruit ripens in the beginning of October, and forms one of the finest late plums for the dessert; more especially as it may be kept in a fresh state for a considerable time, if placed in a dry situation, ready for use, and secure from the storms or even frosts, which frequently render the maturity of later hanging varieties, such as Coe's Late Red, very precarious. It will moreover ultimately attain the condition of a prune, for a fruit enclosed in paper when gathered and laid on a shelf, was found in that condition the following Midsummer. It is easily distinguished from other varieties by the unusually abundant tracing on its surface, which likewise indicates a superior amount of richness. A little of such marking is frequently seen on its female parent, the Imperatrice Violette; and occasionally on the Quetsche, of which there are several varieties which furnish the German prunes of the shops; those persons however who prepare them give a higher price for the fruit on which the above indication appears, than they do for such as are of a uniform violet colour.

Mr. Knight has been eminently successful with regard to the object he had in view in raising this plum and its allied varieties. His wish was to produce a fruit containing sufficient saccharine matter to preserve it without being reduced to a dry, or nearly dry state, as the French prunes frequently are. In order to effect this he raised many plants from the Imperatrice Violette and pollen of Coe's Golden Drop, "one of which," he observes, "appears capable of being long preserved without any material trouble. In the Autumns of 1829 and 1830, I selected a few plums of this variety

and having folded them in blotting paper, I put them into a paper bag and suspended them in my apple chamber. In this situation they all remained perfectly sound till the end of February, or beginning of March, gradually, but slowly becoming more shrivelled, and ultimately still retaining a good deal of juice: and I entertain scarcely any doubt but that with the aid of closed jars, I could have preserved them till Midsummer or longer."

LII. *On the Cultivation of Grapes on flued walls in the open air in Scotland. By* Mr. George Shiells; *Gardener to Lord Blantyre, Erskine House, near Glasgow.*

Read January 18, 1842.

In consequence of some very fine Black Hamburgh Grapes, from the open walls of Erskine House Gardens, near Glasgow, perfectly ripe and well-coloured, having been sent to the Society by Mr. Shiells, on the fifth of October last; on which occasion a Knightian Medal was assigned to them, Mr. Shiells was requested to describe the circumstances under which these specimens, so remarkable for a bad season like that of 1841, were produced; which he has done in the following letter:

Sir,—In compliance with your request I have the pleasure to send you the following statement of our mode of managing vines on a flued wall.

The border is composed of a strong loam, upon a porous whinstone bottom, and is mulched over every winter with littery dung. In the spring the strawy part is taken off and the remainder forked lightly in. The border is well watered with drainings from the dunghill two or three times in the course of the season.

In former years, when the summers were more warm and sunny, my practice was as follows.

About the end of April or beginning of May, when the clusters began to appear, a double net was placed against the wall to protect them, having the upper side fixed over the projecting edge of the coping and the under side fastened to stakes placed four-feet distant from the wall. This netting was allowed to remain until the end of June or until all the fruit was set.—We did not apply fire-heat until the middle or latter end of May, in order to bring

the clusters to blossom early in June, so that the whole crop might be set by the end of that month. In bright sunshine only very moderate fires were kept during the day. If the fine weather continued the fire was omitted from the middle of July till the middle of August, after which time the wall had become considerably shaded by the foliage. The fire was then renewed, and kept somewhat stronger than before through the day, until all the fruit was gathered.

But for some years past there has been so little sunshine in summer, that we have been under the necessity of beginning to put fire to the wall about the middle or end of April, and of continuing it night and day until the crop has been gathered. The heat is very moderate through the day in bright sunshine until the leaves have attained their full size and have partially shaded the wall; but afterwards it is kept stronger through the day than at night; at noon, in bright sunshine, the air within three or four inches of the wall is very warm, often 90° or 100°, while at the same time the hand can be held on the hottest part of the wall without inconvenience. We have no thermometer permanently placed at the wall, and I have only tried the heat occasionally; but I think that during the summer months the air at four inches from the wall at six o'clock P.M. ranged between 60° and 70°, and at six A.M. betwixt 50° and 60°; but it was frequently lower than 60° in the evening and than 50° in the morning.

When the Grapes are pretty well coloured a net is put over them to guard them from birds; it also prevents their being injured much by wind and rain; and if the net is previously dipped in coal gas water, and well dried before being put up, the ripe Grapes are seldom attacked by wasps, although Plums and Apricots, &c. are often much injured by them. I think the smell tends to keep these insects away.

I should now prefer our present practice even in favourable seasons, especially in this part of the country; for I consider there is no additional expence in firing, because in our former practice

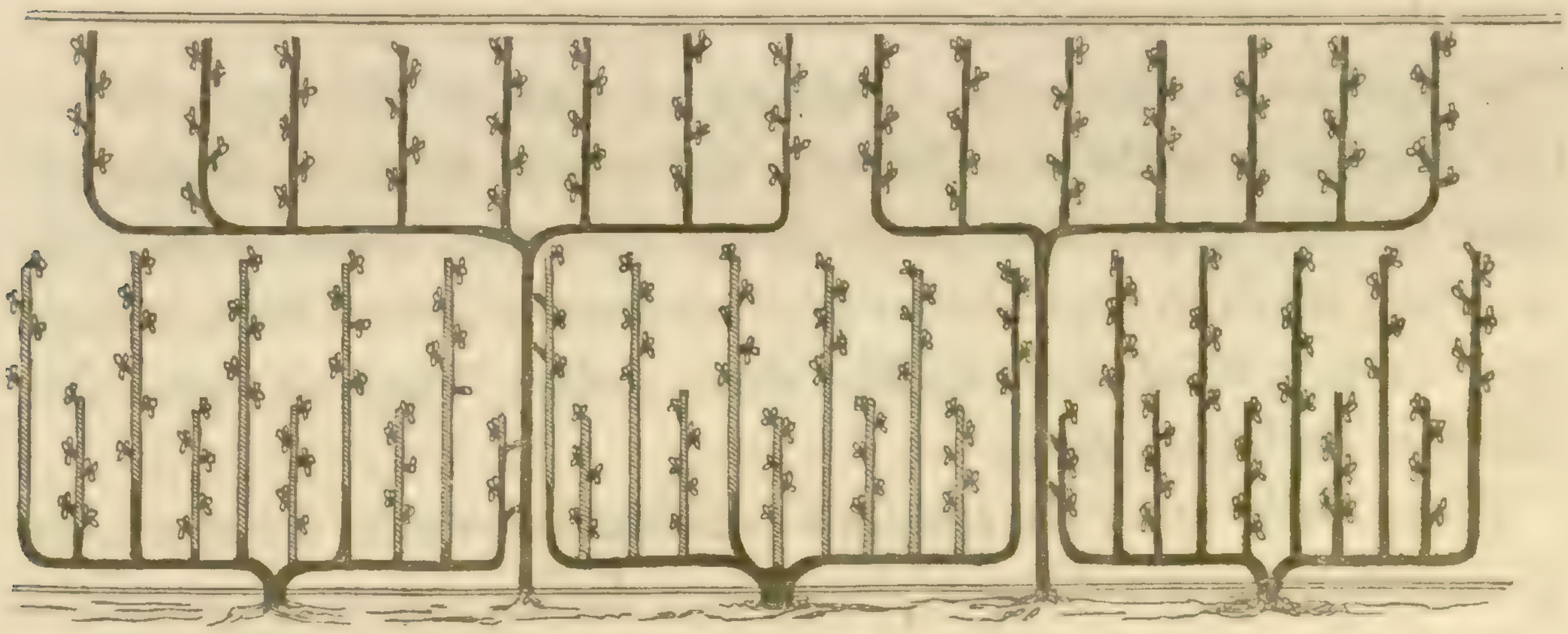
stronger fires than we now use were required in August and September, to ripen the fruit and wood.

I calculate the expense of heating the wall for a season will not exceed 30*s*. upon an average of seasons.* Our vines upon the wall are never attacked by the Red Spider or any other insect; the foliage is large and healthy, although we do not apply the engine above three or four times during the season.

Black Hamburgh Grapes begin to colour about the 6th or 10th of August, and some are ripe in the latter end of September, or much earlier in fine seasons, if required. In the beginning or middle of November what remains of the crop is cut, and preserved in a dry airy room; the fire is then discontinued (for we keep a little fire heat until the crop is off), and in a week or two afterwards in mild weather we prune the vines.

The wall is twenty-one inches thick and covered with a saddle-backed coping which projects four inches on each side, and has a small groove under the edge to intercept the water which flows down the slope of the coping. It is about fifteen feet high, and the length, which is occupied with vines and wrought by one fire, is about thirty-six feet.

A rough sketch of our mode of training accompanies this notice.



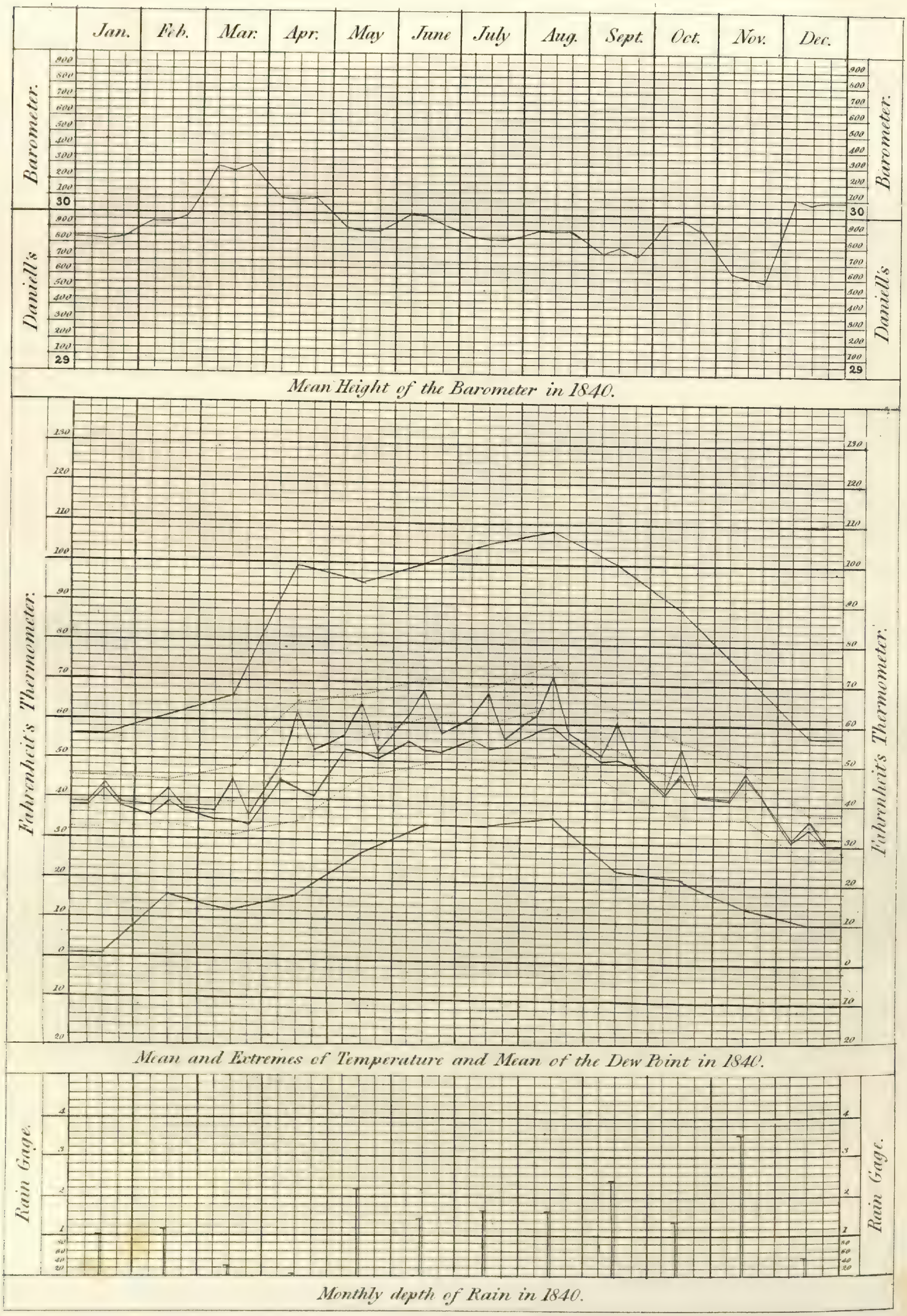
* The usual price of coals at Glasgow is from 8*s*. to 10*s*. per ton. according to the quality and season of the year. We use dross for our forcing houses and flued walls, the usual price of which in Glasgow is about 3*s*. 6*d*. per ton, or delivered here 5*s*. per ton. Some of it is pretty round and for steady fires we prefer it to large coals.

The bearing branches of the vines are about two feet six inches apart; the longer branches of the vines, occupying the lower part of the wall, bear only on the upper half of their length; all the others on their whole length.

Twenty or twenty-five clusters of Black Hamburgh Grapes, I consider sufficient for each vine covering a space of wall twelve feet by ten. Muscadines being much smaller, double that number of clusters is allowed on each vine.

Our flued wall is figured and described in the Gardener's Magazine, vol. 8, p. 670. I may however state in what respect it differs from those of the common construction. In the latter, the first or lower flue is deepest, the others decreasing in depth as they ascend, in order to give an equality of heat to the surface; but this is not accomplished in a satisfactory manner, for the under flue is often found over-heated before the upper one is sufficiently warm. The object is much better accomplished by our method, which consists in having a damper placed between the lower and second flues, immediately over the space where the smoke and heated air enter from the furnace. By this means a part of the smoke and hot air is admitted to the upper flues, while the remainder is made to pass through the two under ones, after which it unites again with that part ascending from the damper to the upper flues. The damper regulates the admission of heat to the top. When the damper is entirely withdrawn the whole heat, or nearly all, goes to the upper flues; the lower and third flues should be deepest; ours run thus: lower flue two feet six inches deep, second flue two feet, third flue two feet three inches, fourth or upper flue one foot six inches deep.

Flued walls upon the common construction would be much improved by having a damper placed in a similar way to regulate the heat.



Mean Height of the Barometer in 1840.

Mean and Extremes of Temperature and Mean of the Dew Point in 1840.

Monthly depth of Rain in 1840.

LIII. *Journal of Meteorological Observations made in the Garden of the Horticultural Society at Chiswick during the year* 1840. *By Mr.* Robert Thompson.

This Journal has been kept on the same plan as the preceding.

JANUARY

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	29.746	49	48	1	Overcast & Mild	29.944	53	50	3	Overcast	29.699	47	46	1	Very Fine
Th.	2	—.757	46	43	3	Very Fine	—.800	52	48	4	Very Fine	—.941	41	41	—	Fine
F.	3	—.992	42	40	2	Ditto	—.924	44	44	—	Ditto	—.999	42	42	—	Slight Rain
● S.	4	—.975	42	42	—	Rain	—.920	40	40	—	Rain	— 908	36	36	—	Rain
S.	5	—.902	35	35	—	Fine	—.918	37	37	—	Cloudy & Fine	—.968	29	29	—	Frosty
M.	6	30.000	28	28	—	Frosty, Cloudy	30.087	36	36	—	Fine but Cold	30.253	30	29	1	Overcast & Do.
T.	7	—.313	24	24	—	Ditto & Clear	—.287	30	21	9	Clear & frosty	—.259	21	21	—	Sharp frost
W.	8	—.204	16	16	—	Severe Frost	—.182	28	28	—	Ditto	—.219	29	29	—	Overcast
Th.	9	—.277	32	32	—	Overcast	—.264	36	34	2	Fine	—.389	30	30	—	Ditto
F.	10	—.511	33	26	7	Ditto	—.513	36	34	2	Overcast	—.588	26	25	1	Ditto
S.	11	—.557	19	19	—	Sharp Frost	—.512	34	34	—	Clear	—.413	25	25	—	Frosty
◗ S.	12	—.333	25	25	—	Ditto	—.352	35	35	—	Fine	—.288	29	29	—	Fine
M.	13	—.192	29	29	—	Clear	—.113	41	31	10	Clear	—.003	32	32	—	Ditto
T.	14	29.944	40	40	—	Hazy, Thawing	29.959	42	42	—	Drizzly	—.078	42	42	—	Hazy
W.	15	30.131	44	44	—	Drizzly	30.117	46	46	—	Ditto	29.879	46	46	—	Drizzly
Th.	16	29.760	40	40	—	Fine	29.763	46	43	3	Fine	—.797	46	46	—	Fine
F.	17	—.518	41	41	—	Foggy	—.576	44	44	—	Drizzly	—.858	32	32	—	Very Clear
S.	18	—.990	29	29	—	Do. & Frosty	—.890	42	42	—	Hazy	—.726	48	48	—	Rain
○ S.	19	—.427	52	52	—	Stormy & Wet	—.697	54	54	—	Boisterous, rain	—.358	41	40	1	Hazy
M.	20	—.643	42	42	—	Rain	—.712	45	45	—	Fine	—.425	48	48	—	Boisterous, rain
T.	21	—.325	52	52	—	Do. & Boisterous	—.341	52	52	—	Boisterous, showers	— 726	48	46	2	Clear & windy
W.	22	—.715	48	48	—	Do. Cloudy	—.652	50	50	—	Do. Cloudy	—.838	40	39	1	Very Clear
Th.	23	—.841	47	47	—	Rain	—.730	52	52	—	Overcast	—.622	51	51	—	Windy, Overcast
F.	24	—.366	52	52	—	Cloudy	—.123	53	53	—	Do. Boisterous	—.010	41	41	—	Boisterous, rain
S.	25	—.352	40	38	2	Overcast	—.382	42	42	—	Rain	—.382	41	41	—	Fine
☾ S.	26	28.844	52	52	—	Boisterous, rain	28.742	50	50	—	Heavy Rain	—.311	39	39	—	Boisterous
M.	27	29.499	36	35	1	Clear	29.535	44	39	5	Clear and Cold	—758	36	35	1	Clear
T.	28	—.427	42	42	—	Rain	—.242	52	52	—	Rain	—.182	46	46	—	Boisterous
W.	29	—.562	44	42	2	Fine	—.677	46	44	2	Very Fine	—.830	37	37	—	Fine
Th.	30	—.962	32	32	—	Foggy	—.932	36	36	—	Hazy	—.685	41	41	—	Overcast
F.	31	—.584	42	42	—	Hazy	—.571	49	46	3	Very Fine	—.539	43	43	—	Ditto
		29.827	38.54	37.96	0.58		29.821	43.45	42.07	1.38		29.836	38.16	37.90	0.26	

JANUARY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	55	46	55	44	S	Little		The Barometer in this month averaged very low. Up to the 15th it was rather high; after this it continued to be greatly depressed, especially on the 26th. Whilst in this state the weather was exceedingly boisterous, with heavy rain, but warm for the period of the season. The quantity of rain was nearly double the usual amount. The mean temperature was about 3° above the average. Severe frost occurred on the night of the 7th the thermometer falling to 12°, whilst the one placed in the radiator indicated only 1° above zero. The 24th was very boisterous, with heavy rain; the 25th was fine in the evening and some lightning was seen, but it was still more vivid and frequent on the 26th, when there fell very heavy showers, the sky in the intervals being remarkably clear.
2	52	39	56	36	SW	Ditto	.02	
3	46	40	46	39	——	Ditto	.06	
4	44	32	44	30	NE	Ditto	.17	
5	40	24	48	16	N	Ditto		
6	38	19	48	9	NE	Ditto		
7	32	12	42	1	E	Ditto		
8	32	26	43	24	SW	Ditto		
9	37	29	40	25	W	Ditto		
10	35	15	40	7	SE	Ditto		
11	37	17	39	9	S	Ditto		
12	42	22	48	16	——	Ditto		
13	40	29	50	24	——	Ditto		
14	46	41	46	38	——	Ditto	.01	
15	46	38	50	34	SW	Ditto	.06	
16	43	36	50	32	W	Ditto	.15	
17	43	24	44	19	NE	Ditto	.02	
18	50	40	51	40	SW	Ditto	.14	
19	54	40	53	36	W	Strong	.37	
20	54	44	54	41	——	Little	.20	
21	52	43	53	40	——	Strong	.09	
22	51	38	53	35	——	Ditto	.04	
23	54	49	54	49	SW	Brisk		
24	53	37	53	34	——	Strong	.49	
25	54	38	52	34	W	Ditto	.05	
26	52	34	53	30	——	Ditto	.34	
27	46	35	50	29	——	Brisk	.02	
28	54	42	52	39	——	Strong	.17	
29	47	26	51	20	NW	Little		
30	40	30	41	29	E	Ditto	.02	
31	50	29	54	25	S	Ditto	.06	
	45·77	32.71	48.80	28.51			2.48	

Mean Pressure from the 3 daily observations 29.828 inches
—— Temperature ..... Ditto ..... 40°.05
—— Dew Point ..... Ditto ..... 39°.31
—— Degree of Dryness ... Ditto ..... 0°.74
—— Degree of Moisture .. Ditto ..... .971
—— Force of Vapour .... Ditto ..... .272 inch.
Least observed degree of Moisture ..... .712
Maximum Temperature in the Shade .... 55°.
Minimum Temperature in ditto ..... 12°.
Maximum Temperature in the Sun ..... 56°.
Minimum of Terrestrial Radiation ..... 1°.
Mean Temperature of external Air ..... 39°.24

WINDS.

North	1 day	N. East	3 days
South	6 ..	S. East	1 .
East	2 ..	N. West	1 ..
West	10 ..	S. West	7 ..

31 days.

Amount of Rain..... 2.48 inches.

FEBRUARY.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
	S. 1	29.363	43	43	—	Cloudy	29.270	47	47	—	Cloudy	29.271	43	43	—	Rain
	S 2	—.360	39	38	1	Clear & Fine	—.416	48	46	2	Very Fine	—.349	46	46	—	Ditto
●	M. 3	—.191	43	43	—	Rain	—.177	48	48	—	Rain	28.988	42	42	—	Heavy Rain
	T. 4	28.769	45	45	—	Cloudy	28.597	45	44	1	Do. Boisterous	—.802	45	45	—	Densely overcast
	W. 5	29.116	42	42	—	Rain	29.257	46	46	—	Cloudy	29.656	42	42	—	Clear
	Th. 6	—.788	38	38	—	Ditto	—.759	46	46	—	Ditto	—.857	40	40	—	Cloudy
	F. 7	—.616	48	48	—	Ditto	—.516	52	52	—	Rain	—.449	40	40	—	Clear
	S. 8	—.569	43	40	3	Clear	—.559	42	42	—	Heavy showers	—.682	34	34	—	Ditto
	S. 9	—.759	37	37	—	Ditto & Fine	—.722	46	46	—	Fine	—.724	45	45	—	Overcast
☽	M. 10	—.588	49	49	—	Overcast	—.665	48	48	—	Heavy showers	—.796	44	44	—	Clear & fine
	T. 11	—.945	40	40	—	Fine	—.975	50	45	5	Fine	—.905	45	45	—	Fine
	W. 12	—.744	46	46	—	Ditto	—.715	49	49	—	Rain	—.781	41	41	—	Clear
	Th. 13	—8 26	39	39	—	Clear	—.853	51	42	9	Very Fine	—.927	41	41	—	Ditto
	F. 14	—958	31	31	—	Foggy	—.966	39	39	—	Foggy	—.957	32	32	—	Foggy
	S. 15	—.880	30	30	—	Do. & Frosty	—.800	43	43	—	Rain	—.733	45	45	—	Rain
	S. 16	—.796	47	47	—	Hazy	—.835	50	50	—	Hazy & mild	—.954	45	45	—	Hazy
○	M. 17	30.008	45	45	—	Foggy	30.036	48	48	—	Dense fog	30.162	41	41	—	Ditto
	T. 18	—.240	34	34	—	Clear & cold	—.260	41	35	6	Dry cold haze	—.306	36	33	3	Overcast
	W. 19	—.335	34	32	2	Ditto	—.380	33	33	—	Slight snow flakes	—.437	32	32	—	Ditto
	Th. 20	—.475	32	32	—	Slight Snow	—.497	33	33	—	Cloudy with do.	—.515	31	29	2	Ditto
	F. 21	—.480	32	20	12	Hazy	—.461	32	24	8	Bleak & Cold	—.417	31	28	3	Ditto
	S. 22	—.362	31	22	9	Overcast	—.337	33	24	9	Ditto	—.286	27	23	4	Ditto
	S. 23	—.265	31	29	2	Dry & frosty	—.284	34	24	10	Cold and dry	—.287	28	24	4	Clear
	M. 24	—.407	27	24	3	Ditto	—.438	36	28	8	Fine but Cold	—.547	30	28	2	Frosty
☾	T. 25	—.609	32	30	2	Frosty haze	—.632	41	34	7	Ditto	—.661	31	31	—	Ditto
	W. 26	—.637	34	30	4	Hazy	—.613	36	26	10	Cold haze	—.563	34	27	7	Slightly Overcast
	Th. 27	—.512	33	28	5	Cloudy	—.549	36	28	8	Cold and dry	—.438	35	30	5	Overcast
	F. 28	—.359	34	30	4	Overcast	—.308	42	38	4	Fine but cold	—.271	36	32	4	Ditto
	S. 29	—.369	34	31	3	Fine	—.389	42	30	12	Ditto	—.414	31	28	3	Clear
		29.942	37.69	35.97	1.72		29.940	42.65	39.24	3.41		29.970	37.68	36 41	1.27	

FEBRUARY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	47	38	47	34	S	Brisk	.20	The weather still continued wet during the first part of the month; but no rain fell after the 17th when a considerable rise took place in the state of the barometer. This stood remarkably high between the 23rd and 27th. Its average height was a little above the mean; and the amount of rain was somewhat less than usual. The temperature was 1° below the average, which appears to have been owing to cold east and north-east winds in the latter part of the month, for there were no severe frosts; the lowest temperature being only 8° below freezing. The 3rd was boisterous with heavy rain and the 14th and 17th were densely foggy.
2	50	40	54	35	SW	Little	.09	
3	49	44	53	36	——	Brisk	.18	
4	47	40	52	39	S	Strong	.30	
5	46	35	46	28	NW	Brisk	.02	
6	50	34	54	29	W	Little	.02	
7	53	40	53	35	SW	Brisk	.03	
8	47	32	51	25	——	Ditto	.02	
9	47	43	49	39	NW	Little		
10	51	37	55	30	SW	Brisk	.13	
11	52	45	57	41	——	Little		
12	50	35	53	30	——	Ditto	.02	Mean Pressure from the 3 daily observations 29.950 inches.
13	53	28	61	21	——	Ditto		—— Temperature ..... Ditto ..... 39°.34
14	47	26	48	24	——	Ditto		—— Dew Point ..... Ditto ..... 37°.21
15	46	40	46	38	——	Ditto	.18	—— Degree of Dryness .... Ditto ..... 2°.13
16	51	44	51	42	——	Ditto		—— Degree of Moisture .. Ditto ..... .937
17	48	32	48	26	SE	Ditto	.06	—— Force of Vapour .... Ditto ..... .257 inch.
18	42	32	50	30	E	Brisk		Least observed degree of Moisture ..... .658
19	36	30	39	29	——	Little		Maximum Temperature in the Shade .... 53°.
20	33	30	35	27	NE	Ditto		Minimum Temperature in ditto ..... 24°.
21	34	28	35	22	E	Brisk		Maximum Temperature in the Sun ..... 61°.
22	34	24	41	17	NE	Ditto		Minimum of Terrestrial Radiation ..... 16°.
23	36	24	45	16	E	Ditto		Mean Temperature of External Air ..... 39°.30
24	41	26	50	17	——	Ditto		
25	44	25	54	16	——	Ditto		WINDS.
26	40	32	48	28	——	Little		North ..... 0 days | N. East.....4 days
27	40	32	48	30	NE	Brisk		South ..... 2 .. | S. East.....1 ..
28	45	32	52	28	——	Little		East..... 8 .. | N. West.....2 ..
29	45	28	55	21	E	Brisk		West ..... 1 .. | S. West..... 11 ..
								29 days.
	44.96	33.65	49.31	28.72			1.25	Amount of Rain.....1.25 inches.

MARCH.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	30.411	32	23	9	Cold & Dry	30.399	36	28	8	Cold & Dry	30.422	32	27	5	Frosty
M.	2	—.466	31	26	5	Ditto	—.459	38	21	17	Fine	—.503	33	30	3	Cold & Dry
T.	3	—.481	37	37	—	Cloudy	—.408	44	38	6	Cloudy	—.466	34	33	4	Ditto
● W.	4	—.416	34	30	4	Bleak & Cold	—.382	39	30	9	Ditto & Cold	—.425	30	30	3	Ditto
Th.	5	—.538	31	31	—	Frosty	—.413	43	26	17	Cold & Dry	—.439	30	28	2	Frosty
F.	6	—.479	29	28	1	Frosty Haze	—.570	46	25	21	Fine	—.534	29	28	1	Ditto
S.	7	—.580	26	26	—	Ditto	—.592	45	30	15	Ditto	—.664	28	25	3	Ditto
S.	8	—.683	31	31	—	Clear & Frosty	—.697	45	30	15	Ditto	—.726	29	29	—	Ditto
M.	9	—.676	28	28	—	Ditto	—.639	49	35	14	Ditto & Clear	—.593	32	32	—	Clear
◗ T.	10	—.430	36	36	—	Fine	—.356	54	25	29	Very Fine	—.322	45	40	5	Fine
W.	11	—.301	44	38	6	Cloudy	—.317	45	45	—	Drizzly	—.369	39	36	3	Overcast
Th.	12	—.295	42	42	—	Overcast	—.263	50	38	12	Cloudy	—.244	34	34	—	Fine
F.	13	—.143	42	42	—	Hazy	—.083	50	44	6	Fine	—.050	41	40	1	Ditto
S.	14	—.068	44	41	3	Overcast	—.069	49	41	8	Cloudy	—.060	38	38	—	Very Fine
S.	15	29.994	43	43	—	Slight rain	29.920	45	45	—	Rain	29.844	40	40	—	Overcast
M.	16	30.019	42	42	—	Hazy	30.106	42	34	8	Fine but Cold	30.283	36	34	2	Clear
T.	17	—.300	39	29	10	Clear	—.295	44	32	12	Ditto	—.279	39	38	1	Slightly Overcast
○ W.	18	—.218	42	39	3	Overcast	—.182	45	42	3	Overcast	—.143	41	41	—	Overcast
Th.	19	—.202	40	40	—	Cloudy & Cold	—.227	46	35	11	Fine	—.333	32	32	—	Clear
F.	20	—.340	39	38	1	Cloudy	—.319	49	35	14	Cloudy & Cold	—.399	36	34	2	Ditto
S.	21	—.438	34	25	9	Very Clear	—.443	44	28	16	Ditto	—.432	31	30	1	Fine
S.	22	—.346	35	34	1	Overcast	—.276	44	42	2	Overcast	—.154	39	39	—	Overcast
M.	23	—.032	40	36	4	Fine	—.033	41	38	3	Fine but Cold	—.202	31	30	1	Clear
T.	24	—.175	34	31	3	Clear & Cold	—.181	41	41	--	Hail Showers	—.235	32	30	2	Cloudy, frosty
W.	25	—.331	34	33	1	Fine but Cold	—.317	45	29	16	Ditto	—.384	29	27	2	Clear & Do.
◖ Th.	26	—.362	34	32	2	Overcast	—.293	39	33	6	Cloudy & Cold	—.237	31	28	3	Ditto
F.	27	—.165	38	26	12	Cold & Dry	—.153	42	32	10	Ditto	—.150	35	32	3	Overcast
S	28	—.155	37	35	2	Overcast	—.110	41	31	10	Ditto	29.957	38	36	2	Ditto
S.	29	29.827	42	40	2	Ditto	29.836	45	40	5	Cloudy	—.858	42	40	2	Fine
M.	30	—.892	43	40	3	Fine	—.921	49	34	15	Ditto	—.930	44	43	1	Ditto
T.	31	—.866	45	45	—	Slight rain	—.846	48	48	—	Drizzly	—.823	43	43	—	Drizzly
		30.278	37.03	34.90	2.13		30.258	44.61	34.68	9.93		30.273	35.35	33.68	1.67	

MARCH.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	39	29	44	22	NE	Brisk		This was a very cold but dry month almost throughout. The mean temperature was nearly 4° below the average, whilst the amount of rain was not quite $\frac{3}{10}$ of an inch. The barometer averaged a greater height than it has in any month since June 1826. Its greatest elevation occured on the 8th and was such as is rarely equalled. North and easterly winds were prevalent. The sky was much clearer than in the several preceding springs, and the days were bright and sunny; the nights averaged a temperature below the freezing point. Vegetation however was safe, continuing to advance but slowly. Snow and hail-showers fell on the 24th.
2	45	32	52	27	E	Ditto		
3	48	30	54	25	NE	Ditto		
4	48	24	54	16	——	Ditto		
5	50	19	59	12	E	Little		
6	53	20	62	13	——	Ditto		
7	52	21	62	14	——	Ditto		
8	54	20	62	12	——	Ditto		
9	56	25	66	18	NE	Ditto		
10	56	41	61	37	N	Ditto		
11	46	34	47	28	NE	Ditto	.01	
12	51	29	57	21	N	Ditto		
13	53	39	58	35	NW	Brisk		
14	49	35	50	28	——	Little		
15	48	38	51	36	W	Ditto	.11	
16	42	35	54	29	E	Brisk		
17	47	39	56	29	NE	Little		
18	46	39	54	38	N	Ditto		
19	49	29	58	21	NE	Ditto		
20	52	29	60	24	NW	Ditto		
21	46	25	53	18	N	Brisk		
22	50	34	57	27	NW	Little	.01	
23	50	30	58	23	N	Ditto	.03	
24	43	30	51	24	——	Brisk	.01	
25	44	26	56	18	NE	Ditto	.01	
26	40	31	44	25	——	Ditto		
27	41	34	44	31	——	Ditto		
28	42	36	44	33	N	Little		
29	50	34	60	24	W	Ditto		
30	54	43	60	41	S	Ditto		
31	47	42	47	39	W	Ditto	.10	
	48.06	31.35	54.61	25.74			0.28	

Mean Pressure from the 3 daily observations 30.269 inches.
—— Temperature ..... Ditto ..... 38°.99
—— Dew Point ..... Ditto ..... 34°.42
—— Degree of Dryness ... Ditto ..... 4°.57
—— Degree of Moisture .. Ditto ..... .864
—— Force of Vapour ..... Ditto ..... .235 inch.
Least observed degree of Moisture ..... .369
Maximum Temperature in the Shade .... 56°.
Minimum Temperature in ditto ..... 19°.
Maximum Temperature in the Sun ..... 66°.
Minimum of Terrestrial Radiation ..... 12°.
Mean Temperature of External Air ..... 39°.70

WINDS.

North	7 day	N. East.....	10 days
South	1 ..	S. East.....	0 ..
East	6 ..	N. West.....	4 ..
West.....	3 ..	S. West	0 ..

31 days.

Amount of Rain..... 0.28 inch.

APRIL.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	29.685	44	44	—	Rain	29.638	51	51	—	Cloudy	29.653	42	42	—	Overcast
● Th.	2	—.714	41	41	—	Hazy	—.762	55	40	15	Very Fine	—.922	39	36	3	Ditto
F.	3	30.063	41	38	3	Cold Haze	30.030	50	32	18	Cold & dry	30.012	32	32	—	Clear & Frosty
S.	4	29 980	40	33	7	Fine	29.918	52	38	14	Fine	29.958	40	37	3	Fine
S.	5	30.062	45	40	5	Ditto	30.033	55	37	18	Very Fine	30.012	45	44	1	Very Fine
M.	6	29.814	45	40	5	Ditto	29.713	57	38	19	Cloudy	29.480	39	37	2	Fine
T.	7	—.560	45	45	—	Ditto	—.646	48	48	—	Slight shower	—.845	40	40	—	Stormy showers
W.	8	30.026	42	42	—	Ditto	30.053	47	47	—	Showery	30.175	34	34	—	Clear
☽ Th.	9	—.277	42	42	—	Cloudy & Cold	—.309	50	39	11	Bleak & Cold	—.416	33	30	3	Ditto
F.	10	—.409	43	39	4	Fine	—.396	55	33	22	Overcast, fine	—.373	36	33	3	Ditto
S.	11	—.283	41	41	—	Ditto	—.162	61	36	25	Very Fine	—.126	42	40	2	Very Fine
S.	12	—.075	50	47	3	Overcast	—.015	57	42	15	Ditto	29.994	34	34	—	Clear
M.	13	29.950	41	40	1	Slight Haze	29.873	61	34	27	Fine very dry	—.860	35	32	3	Ditto
T.	14	—.817	45	39	6	Clear	—.808	65	35	30	Ditto Ditto	—.868	39	34	5	Ditto
W.	15	—.945	44	41	3	Dry Haze	—.936	67	40	27	Ditto Ditto	30.050	41	38	3	Ditto
○ Th.	16	30.107	48	41	7	Fine	30.095	65	35	30	Ditto Ditto	—.185	43	43	—	Ditto
F.	17	—.204	45	42	3	Ditto	—.164	60	28	32	Ditto Ditto	—.105	39	30	9	Ditto
S.	18	—.050	45	40	5	Clear	—.164	64	38	26	Clear, hot & dry	29.992	41	40	1	Ditto
S.	19	29.884	42	39	3	Hazy	29.897	63	40	23	Very Fine	—.927	41	40	1	Fine
M.	20	—.902	47	44	3	Fine	—.886	65	38	27	Ditto	—.974	48	46	2	Very Fine
T.	21	30.060	51	48	3	Overcast	30.082	62	51	11	Cloudy	30.142	50	45	5	Ditto
W.	22	—.212	57	54	3	Ditto	—.261	68	55	13	Do. & Fine	—.337	55	53	2	Ditto
Th.	23	—.337	57	53	4	Slight Haze	—.325	67	54	13	Ditto	—.305	48	46	2	Ditto
☾ F.	24	—.277	60	52	8	Very Fine	—.126	73	52	21	Very Fine	—.189	51	51	—	Ditto
S.	25	—.167	59	55	4	Ditto	—.112	78	41	37	Very dry & hot nearly cloudless	—.223	49	45	4	Ditto
S.	26	—.280	58	53	5	Ditto	—.295	76	49	27	Ditto	—.369	50	45	5	Ditto
M.	27	—.340	60	54	6	Ditto	—.297	74	55	19	Ditto	—.322	50	46	4	Ditto
T.	28	—.292	54	49	5	Slight dry Haze	—.278	76	55	21	Ditto	—.257	52	48	4	Ditto
W.	29	—.274	59	50	9	Very Fine	—.268	75	48	27	Hot & dry	—.323	50	46	4	Ditto
Th.	30	—.315	56	53	3	Ditto	—.238	71	51	20	Ditto	—.338	49	46	3	Ditto
		30.078	48.23	44.63	3.60		30.059	62.26	42.66	19.60		30.091	42.90	40.43	2.47	

APRIL.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	54	33	56	27	S	Little	.02	The last month was remarkably dry, but the present still more so, rain having fallen on 4 days only, and on these it was very slight, scarcely amounting to $\frac{1}{17}$ of an inch. In no month has there fallen so limited a quantity for the last fifteen years at least. The barometer, though not so high as in the preceeding month, was considerably above the mean. The temperature was 2° above the average, which is to be attributed to the effect of powerful direct solar heat, for the wind was seldom from warm quarters, and the nights were frequently frosty, the clear state of the sky being favourable to radiation. The difference between the highest temperature in the days and the lowest at nights averaged as much as 30°; on the 13th it was 42°. Between the 24th and 38th the weather was extremely hot for the period of the season. The dryness of the air on the 25th was excessive.
2	60	38	72	29	SE	Ditto		
3	53	27	63	18	E	Brisk		
4	51	32	62	24	N	Little		
5	59	35	62	29	NW	Ditto		
6	58	30	61	23	W	Brisk		
7	52	36	61	28	N	Little	.02	
8	54	29	55	21	——	Brisk	.01	
9	50	25	57	17	——	Ditto	.01	
10	56	25	66	18	NE	Little		
11	62	33	68	25	SW	Ditto		
12	60	26	71	18	——	Ditto		
13	68	26	83	16	E	Ditto		
14	69	30	83	21	NW	Ditto		
15	70	29	84	20	S	Ditto		
16	70	37	84	30	N	Ditto		
17	62	32	83	24	E	Brisk		
18	64	33	76	23	——	Little		
19	64	29	78	21	——	Ditto		
20	69	41	78	32	W	Ditto		
21	62	46	71	42	——	Ditto		
22	66	42	71	34	N	Ditto		
23	69	42	76	35	W	Ditto		
24	75	41	86	33	SW	Ditto		
25	80	40	92	32	S	Ditto		
26	77	42	95	34	SW	Ditto		
27	76	42	95	31	E	Ditto		
28	81	40	99	31	SE	Ditto		
29	79	39	96	31	NW	Ditto		
30	74	46	96	41	NE	Ditto		
	64.80	34.86	75.96	26.93			0.06	

Mean Pressure from the 3 daily observations 30.076 inches.
—— Temperature ..... Ditto ..... 51°.13
—— Dew Point ..... Ditto ..... 42°.57
—— Degree of Dryness ... Ditto ..... 8°.56
—— Degree of Moisture .. Ditto ..... .747
—— Force of Vapour. .... Ditto .... . .310 inch.
Least observed degree of Moisture ..... .365
Maximum Temperature in the Shade ..... 81°.
Minimum Temperature in ditto ..... 25°.
Maximum Temperature in the Sun ..... 99°.
Minimum of Terrestrial Radiation ..... 16°.
Mean Temperature of External Air ..... 49°.83

WINDS.

North.....	6 days	N. East.....	2 days
South.....	3 ..	S. East.....	2 ..
East.....	6 ..	N. West.....	3 ..
West.....	4 ..	S. West.....	4 ..

30 days.

Amount of Rain..... .....0.06 inch.

MAY.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
F.	1	30.343	54	54	—	Slight haze	30.325	62	46	16	Slight haze	30.331	57	54	3	Fine
● S.	2	—.290	53	53	—	Easterly haze	—.230	70	47	23	Hot and dry	—.194	49	39	10	Ditto
S.	3	—.161	59	48	11	Ditto	—.125	70	45	25	Ditto	—.109	49	44	5	Ditto
M.	4	—.105	57	48	9	Slight haze	—.070	68	41	27	Ditto	29.994	49	40	9	Ditto
T.	5	29.924	54	45	9	Overcast	29.868	70	47	23	Overcast	—.883	53	45	8	Overcast
W.	6	—.903	54	48	6	Ditto	—.848	65	47	18	Slight dry haze	—.800	57	57	—	Ditto
Th.	7	—.761	61	58	3	Ditto	—.702	69	52	17	Ditto	—.732	52	50	2	Fine
☽ F.	8	—.698	63	58	5	Ditto	—.669	68	68	—	Heavy showers	—.646	54	54	—	Very Fine
S.	9	—.525	57	57	—	Rain	—.467	67	57	10	Do. & sultry	—.425	55	55	—	Rain
S.	10	—.399	60	60	—	Cloudy	—.392	69	54	15	Sultry	—.474	56	56	—	Very Fine
M.	11	—.533	54	54	—	Drizzly	—.569	57	53	4	Overcast	—.644	52	52	—	Slight drizzle
T.	12	—.658	56	54	2	Hazy	—.657	61	54	7	Ditto	—.694	51	51	—	Overcast
W.	13	—.667	53	53	—	Rain	—.654	66	60	6	Sultry	—.702	54	54	—	Cloudy
Th.	14	—.682	57	54	3	Fine	—.643	67	56	11	Cloudy [der	—.562	55	55	—	Overcast
F.	15	—.404	54	54	—	Heavy Rain	—.437	57	57	—	Heavy rain, thun	—.442	55	55	—	Rain
○ S.	16	—.413	58	55	3	Cloudy	—.408	61	61	—	Hail, showery	—.379	54	54	—	Cloudy
S.	17	—.389	56	56	—	Do. Rain	—.387	59	59	—	Showery	—.469	50	50	—	Clearing
M.	18	—.609	55	49	6	Cloudy	—.689	57	47	10	Cloudy & fine	—.883	57	57	—	Rain
T.	19	30.060	48	48	—	Do. and Cold	30.132	56	46	10	Cloudy	30.097	49	49	—	Clear
W.	20	—.071	51	46	5	Ditto	—.060	59	45	14	Ditto	—.138	45	45	—	Cloudy
Th.	21	—.202	46	37	9	Clear & Cold	—.247	52	34	18	Do. & Cold	—.305	45	42	3	Bleak & Cold
F.	22	—.361	49	45	4	Cloudy & Do.	—.369	56	43	13	Overcast	—.393	46	46	—	Fine
S.	23	—.361	54	50	4	Clear	—.309	70	60	10	Fine	—.229	52	50	2	Ditto
☾ S.	24	—.182	63	60	3	Overcast	—.128	66	59	7	Overcast & do.	29.953	60	60	—	Rain
M.	25	29.831	59	59	—	Ditto	29.684	63	63	—	Cloudy	—.959	48	48	—	Fine
T.	26	—.894	54	54	—	Rain	—.764	62	62	—	Ditto	—.962	46	46	—	Ditto
W.	27	30.041	54	48	6	Clear	30.014	64	45	19	Very Fine	—.960	49	48	1	Ditto
Th.	28	29.909	60	47	13	Very Fine	29.887	73	56	17	Ditto	—.960	54	50	4	Ditto
F.	29	30.120	59	49	10	Fine	30.153	66	44	22	Ditto	30.284	59	56	3	Ditto
S.	30	—.388	63	58	5	Ditto	—.365	69	51	18	Ditto [less	—.375	55	52	3	Ditto
● S.	31	—.379	66	58	8	Ditto	—.328	75	56	19	Hot & dry, cloud-	—.326	55	48	7	Ditto
		29.914	56.16	52.16	4.00		29.889	64.32	52.10	12.22		29.880	52.32	50.39	1.93	

MAY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	67	43	81	38	NE	Little		
2	74	42	90	36	E	Ditto		
3	74	43	90	36	——	Ditto		
4	70	41	86	32	——	Brisk		
5	66	46	87	44	——	Little		
6	68	49	83	47	——	Ditto	.01	
7	68	50	83	45	SW	Ditto		
8	70	51	87	49	S	Ditto	.12	
9	71	51	86	50	SE	Ditto	.60	
10	72	50	93	50	W	Ditto	.01	
11	55	50	64	49	N	Ditto	.01	
12	62	48	71	48	E	Ditto	.16	
13	67	49	83	48	S	Ditto	.05	
14	66	50	80	44	——	Ditto	32	
15	60	49	62	48	SW	Ditto	.41	
16	65	47	82	40	——	Brisk	.14	
17	62	46	77	43	S	Little	.09	
18	62	45	79	44	W	Ditto	.01	
19	56	34	69	27	N	Ditto		
20	60	40	74	34	NW	Brisk	.01	
21	54	42	69	34	N	Ditto		
22	64	36	79	29	——	Little		
23	71	51	92	46	SW	Ditto		
24	67	55	79	54	——	Brisk	.20	
25	66	45	79	40	W	Boisterous	.01	
26	65	38	80	33	——	Brisk	.03	
27	74	39	85	32	SW	Little		
28	77	39	95	46	——	Ditto		
29	70	44	90	37	W	Brisk		
30	73	48	91	41	S	Little		
31	80	44	95	38	——	Ditto		
	67.00	45.32	81.97	41.35			2.18	

The temperature was a degree above the average, and the amount of rain about half an inch above the usual quantity for this month, which was in every respect a most favourable one for vegetation. Rain began to fall on the 6th after 11 weeks of almost uninterrupted dry weather. Throughout this protracted period however the ground retained sufficient moisture for the roots of plants; for previously to the 17th of February it was completely soaked; the surface afterwards became pulverised by frost, and the loose dust acted as a mulching, preventing the moisture below from evaporating and the soil from becoming hard. There was very heavy rain on the 15th, with thunder, and a hail shower at noon on the 16th.

Mean Pressure from the 3 daily observations 29.894 inches
—— Temperature .....Ditto..... 57°.60
—— Dew Point .....Ditto..... 51°.55
—— Degree of Dryness ....Ditto..... 6°.05
—— Degree of Moisture ...Ditto..... .812
—— Force of Vapour .....Ditto..... .421 inch.
Least observed degree of Moisture ..... .404
Maximum Temperature in the Shade ..... 80°.
Minimum Temperature in ditto..... 34°.
Maximum Temperature in the Sun ..... 95°.
Minimum of Terrestrial Radiation ..... 27°.
Mean Temperature of External Air ..... 56°.16

WINDS.

North.....	4 days	N. East	1 days
South.....	6 ..	S. East	1 ..
East	6 ..	N. West	1 ..
West.....	5 ..	S. West	7 ..

31 days.

Amount of Rain .....2.18 inches.

JUNE.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
M.	1	30.195	65	55	10	Very Fine	29.995	82	57	25	Hot and Dry	29.900	59	59	—	Fine
T.	2	29.808	64	64	—	Thunder Storm	—.846	53	53	—	Heavy Thund.	—.981	58	58	—	Ditto
W.	3	30.082	56	47	9	Fine	30.136	62	39	23	Fine [showers	30.144	54	54	—	Ditto
Th.	4	—.044	52	52	—	Overcast	—.168	65	51	14	Overcast &Do.	—.090	55	55	—	Ditto
F.	5	—.040	54	54	—	Drizzly	29.990	60	50	10	Ditto Do.	29.928	52	52	—	Rain
S.	6	29.919	62	58	4	Very Fine	—.893	72	48	24	Cloudless & Hot	—.799	60	60	—	Heavy Rain
D S.	7	—.979	62	61	1	Ditto	30.014	67	55	12	Very Fine	—.956	65	65	—	Very Fine
M.	8	30.045	61	51	10	Ditto	—.013	71	55	16	Cloudless & Hot	—.949	62	60	2	Cloudy & Fine
T.	9	29.986	70	66	4	Overcast & Do.	29.975	77	63	14	Very Fine	—.908	60	58	2	Ditto
W.	10	—.993	65	58	7	Ditto	—.993	66	55	11	Cloudy	30.016	56	56	—	Clear
Th.	11	30.082	64	60	4	Fine	30.020	70	66	4	Do. & Fine	29.974	56	54	2	Cloudy & Fine
F.	12	29.988	65	65	—	Slight Rain	29.948	72	64	8	Overcast	—.841	60	56	4	Ditto
S.	13	—.974	65	58	7	Cloudy & Fine	30.045	68	56	12	Cloudy & very	—.965	56	54	2	Clear
S.	14	—.970	65	60	5	Fine	29.979	72	65	7	Fine [Fine	—.997	57	56	1	Ditto
O M.	15	30.027	65	53	12	Very Fine	—.996	75	54	21	Ditto	—.884	63	60	3	Clear & Fine
T.	16	29.855	69	60	9	Fine	—.860	75	55	20	Hot & Dry	—.784	60	50	10	Clear
W.	17	—.804	61	56	5	Ditto	—.769	73	67	6	Fine	—.767	56	56	—	Showery
Th.	18	—.858	60	60	—	Showery	—.886	65	55	10	Fine but windy	—.945	57	48	9	Clear
F.	19	—.988	60	60	—	Slight Rain	—.910	60	60	—	Slight Rain	—.895	52	52	—	Ditto
S.	20	30.103	59	58	1	Fine	30.166	67	52	15	Very Fine	30.201	56	56	—	Fine
S.	21	—.193	66	54	12	Ditto	—.075	75	59	16	Ditto	29.917	60	58	2	Ditto
☾ M.	22	29 823	60	58	2	Very Fine	29.809	67	55	12	Overcast	—.741	59	58	1	Ditto
T.	23	—.729	61	56	5	Ditto	—.826	65	48	17	Fine	—.659	56	56	—	Fine
W.	24	—.805	54	50	4	Fine	—.835	58	38	20	Ditto	—.845	53	41	12	Cloudy
Th.	25	—.958	55	48	7	Cloudy	—.964	60	45	15	Cloudy	30.004	53	47	6	Ditto & Cold
F.	26	30.090	61	55	6	Fine	30.115	67	57	10	Ditto	—.108	58	48	10	Ditto
S.	27	—.146	64	58	6	Cloudy& Do.	—.117	70	54	16	Do. & Fine	—.056	62	62	—	Rain
S.	28	—.045	66	58	8	Ditto	—.022	70	58	12	Ditto	—.038	60	60	—	Very Fine
● M.	29	—.041	61	58	3	Overcast	—.019	72	58	14	Ditto	29.993	62	62	—	Ditto
T.	30	29 970	64	64	—	Hazy	29.933	67	63	4	Cloudy	—.893	55	55	—	Rain
		29.984	61.86	57.16	4.70		29.977	68.10	55.17	12.93		29.939	57.73	55.53	2.20	

JUNE.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	84	50	98	48	SW	Little			
2	65	45	73	38	NW	Ditto		.17	
3	63	41	80	31	——	Brisk		.06	
4	66	51	80	50	W	Little		.04	
5	65	50	78	48	——	Ditto		.07	
6	77	55	95	52	SE	Ditto		.28	
7	74	41	95	34	W	Ditto			
8	75	57	92	53	S	Ditto			
9	78	50	100	44	SW	Ditto			
10	77	43	87	37	W	Ditto			
11	74	59	89	56	——	Ditto		.01	
12	71	57	81	54	SW	Brisk			
13	77	45	94	42	W	Little			
14	74	47	90	42	SW	Brisk			
15	77	56	95	53	——	Ditto			
16	78	57	94	55	——	Ditto		.09	
17	73	49	88	46	——	Ditto		.22	
18	70	49	80	44	W	Ditto		.01	
19	62	45	70	40	SW	Ditto		.09	
20	75	52	90	46	W	Little			
21	77	53	94	50	SW	Ditto		.13	
22	72	49	88	41	W	Brisk			
23	70	46	87	46	——	Little		.06	
24	64	44	80	38	NW	Ditto			
25	64	47	78	42	——	Ditto			
26	67	54	86	50	W	Ditto			
27	74	57	93	54	——	Ditto		.10	
28	73	51	91	46	E	Ditto			
29	74	51	90	47	W	Ditto			
30	69	47	78	44	S	Brisk		.15	
	71.96	49.93	86.80	45.70				1.48	

The weather still continued very favourable throughout the month; the temperature being fully an average, with a moderate supply of moisture, vegetation grew luxuriantly. West and South-west winds were by far the most prevalent. A heavy thunder-storm occurred on the morning of the 2nd preceded by rain, and thunder showers fell through the day. The 6th was cloudless and hot; but although the heat increased from noon till after 3 p.m. the degree of dryness as indicated by the Hygrometer diminished, and rain commenced at 5 p.m.

Mean Pressure from the 3 daily observations 29.966 inches.
—— Temperature ..... Ditto ..... 62°.56
—— Dew Point ..... Ditto ..... 55°.95
—— Degree of Dryness ... Ditto ..... 6°.61
—— Degree of Moisture .. Ditto ..... .811
—— Force of Vapour ..... Ditto ..... .491 inch.
Least observed degree of Moisture ..... .450
Maximum Temperature in the Shade..... 84°.
Minimum Temperature in ditto ..... 41°.
Maximum Temperature in the Sun .... 100°.
Minimum of Terrestrial Radiation ..... 34°.
Mean Temperature of External Air ..... 60°.94

WINDS.

North .....0 day	N. East .....0 days
South .....2 ..	S. East .....1 ..
East .....1 ..	N. West .....4 ..
West ..... 13 ..	S. West.....9 ..

30 days.

Amount of Rain..... 1.48 inches.

JULY.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
W.	1	29.985	62	55	7	Overcast	29.809	67	62	5	Cloudy, boisterous	29.876	60	60	—	Overcast
Th.	2	—.739	61	61	—	Rain	—.699	68	64	4	Ditto	—.544	60	60	—	Drizzly
F.	3	—.487	57	57	—	Showery	—.483	66	45	21	Do. & Fine	—.708	58	51	7	Cloudy
S.	4	—.776	64	53	11	Very Fine	—.810	67	50	17	Fine	—.676	59	59	—	Slight Rain
S.	5	—.681	63	48	15	Ditto	—.683	66	47	19	Cloudy, windy	—.710	54	52	2	Fine
☽ M.	6	—.767	62	55	7	Ditto	—.575	66	53	13	Fine	—.434	54	54	—	Rain
T.	7	—.536	58	50	8	Cloudy & cool	—.652	65	48	17	Ditto	—.718	56	56	—	Cloudy
W.	8	—.764	64	56	8	Fine	—.727	68	55	13	Ditto	—.625	55	55	—	Heavy Rain
Th.	9	—.798	60	60	—	Ditto	—.881	64	55	9	Ditto	—.928	54	48	6	Fine
F.	10	—.946	60	57	3	Ditto	—.925	60	48	12	Cloudy	—.893	53	51	2	Ditto
S.	11	—.936	61	55	6	Ditto	—.925	64	45	19	Very Fine	—.924	50	45	5	Clear
S.	12	—.949	55	41	14	Fine but cool	—.939	63	45	18	Ditto	—.905	53	45	8	Overcast
M.	13	—.950	56	50	6	Ditto	30.020	63	46	17	Fine	30.033	49	48	1	Cloudy
○ T.	14	—.942	57	52	5	Ditto	—.239	68	43	25	Ditto	—.269	56	56	—	Ditto
W.	15	30.235	68	52	16	Fine	—.154	71	48	23	Ditto	—.137	55	48	7	Fine
Th.	16	—.101	66	54	12	Ditto	—.001	76	49	27	Ditto	29.919	57	50	7	Very Fine
F.	17	29.920	61	50	11	Ditto	29.909	71	47	24	Ditto	—.889	60	56	4	Overcast
S.	18	—.725	65	60	5	Overcast	—.735	65	65	—	Slight Rain	—.717	64	64	—	Ditto
S	19	—.662	66	60	6	Ditto	—.588	71	60	11	Cloudy	—.470	55	55	—	Rain
M.	20	—.511	62	62	—	Ditto	—.511	64	64	—	Heavy showers	—.441	55	55	—	Cloudy
T.	21	—.563	60	58	2	Very Fine	—.566	73	53	20	Very Fine	—.646	53	53	—	Ditto
☾ W.	22	—.757	60	60	—	Fine	—.793	66	60	6	Fine	—.844	53	53	—	Ditto & fine
Th.	23	30.013	59	59	—	Overcast	—.981	61	50	11	Cloudy	30.002	54	52	2	Overcast
F.	24	29.960	62	53	9	Ditto & Fine	—.993	68	60	8	Ditto	29.906	57	57	—	Rain
S.	25	—.774	60	60	—	Overcast	—.725	70	64	6	Showery	—.646	56	56	—	Ditto
S.	26	—.638	62	62	—	Cloudy	—.627	65	60	5	Cloudy	—.739	55	55	—	Ditto
M.	27	—.890	59	59	—	Ditto	—.745	70	58	12	Fine	—.926	52	52	—	Clear & Fine
● T.	28	30.019	62	62	—	Hazy	30.034	74	63	11	Cloudy & do.	30.078	63	60	3	Cloud & Do.
W.	29	—.163	64	57	7	Very Fine	—.171	73	50	23	Very Fine	—.134	60	60	—	Ditto
Th.	30	—.095	64	62	2	Cloudy	—.050	74	62	12	Do. with Clouds	—.029	61	61	—	Rain
F.	31	—.126	62	56	6	Very Fine	—.140	68	46	22	Very Fine	—.159	56	48	8	Clear & Fine
		29.851	61.35	56.00	5.35		29.845	67.58	53.71	13.87		29.836	56.03	54.03	2.00	

JULY.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	68	58	81	56	SW	Strong	.01	
2	66	55	72	53	——	Brisk	.02	
3	68	51	82	49	W	Strong		
4	72	56	83	55	——	Brisk		
5	69	50	85	45	SW	Strong		
6	67	49	71	44	——	Brisk	.14	
7	71	51	86	46	W	Ditto		
8	66	48	74	46	SW	Ditto	.46	
9	68	48	85	43	NW	Little		
10	67	50	83	45	——	Ditto		
11	68	46	85	38	——	Ditto		
12	65	42	82	35	W	Ditto		
13	62	41	76	34	NE	Brisk		
14	74	55	90	52	W	Ditto		
15	80	48	96	40	SW	Ditto		
16	79	46	99	39	S	Little		
17	75	56	96	54	W	Ditto		
18	70	56	79	53	——	Ditto		
19	69	49	86	44	S	Brisk	.06	
20	69	51	85	46	W	Little	.09	
21	74	47	96	41	SW	Ditto	.54	
22	69	49	99	42	——	Ditto	.01	
23	65	51	82	48	W	Ditto		
24	66	56	83	53	SW	Brisk	.02	
25	67	54	89	50	——	Little	.22	
26	65	54	87	51	NE	Ditto	.05	
27	70	49	99	45	SW	Ditto		
28	74	58	98	55	W	Ditto	.01	
29	75	54	105	51	NW	Ditto		
30	69	51	94	47	SW	Ditto	.05	
31	70	45	91	40	NW	Ditto		
	69.35	50.77	87.09	46.44			1.68	

The mean temperature of the month of July advances on an average about $2\frac{1}{2}^{\circ}$ above that of June; but instead of advancing, the temperature of the present month has fallen back 1°, being about 3° colder than usual. During the first week the weather was boisterous, but without much rain, till the 8th, on the evening of which nearly half an inch fell. Vegetation having been brought forward by the high temperature of the four previous months was the more susceptible of a change and hence proved much retarded in consequence of a falling off at a period when, in order to proceed favourably, an advancing temperature is necessary.

Mean Pressure from the 3 daily observations 29.844 inches.
—— Temperature .....Ditto..... $61^{\circ}.65$
—— Dew Point .....Ditto..... $54^{\circ}.58$
—— Degree of Dryness ....Ditto..... $7^{\circ}.07$
—— Degree of Moisture....Ditto..... .797
—— Force of Vapour.....Ditto..... .469 inch.
Least observed degree of Moisture..... .404
Maximum Temperature in the Shade ..... 80°.
Minimum Temperature in Ditto..... 41°.
Maximum Temperature in the Sun ..... 105°.
Minimum of Terrestrial Radiation ..... 34°.
Mean Temperature of External Air..... $60^{\circ}.06$

WINDS.

North.....0 days		N. East ....2 days	
South 2	..	S. East.....0	..
East 0	..	N. West....5	..
West 10	..	S. West ...12	..

31 days.

Amount of Rain ..... 1.68 inches.

AUGUST.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	30.205	62	57	5	Very Fine	30.176	71	53	18	Very Fine	30.133	54	54	—	Clear & Fine
S.	2	—.171	64	55	9	Ditto	—.143	78	44	34	Ditto	—.135	66	60	6	Cloudy & Do.
M.	3	—.161	66	58	8	Ditto [Haze	—.123	80	53	27	Hot & dry	—.088	55	49	6	Clear Do.
T.	4	—.117	65	60	5	Hot with slight	—.082	80	53	27	Ditto	—.090	62	62	—	Clear & Fine
☽ W.	5	—.081	66	60	6	Dry Haze	—.054	74	60	14	Ditto	—.991	58	58	—	Ditto
Th.	6	29.959	67	61	6	Fine	29.926	80	58	22	Ditto	—.917	65	52	13	Ditto
F.	7	—.945	69	67	2	Slightly Overcast	—.930	78	57	21	Ditto	—.991	57	54	3	Ditto
S.	8	30.068	68	62	6	Fine	30.074	76	55	21	Ditto	30.129	56	56	—	Ditto
S.	9	—.223	61	57	4	Ditto	—.166	77	50	27	Ditto	—.106	61	57	4	Ditto
M.	10	—.052	64	60	4	Very Fine	29.965	82	69	13	Very Fine	29.779	63	55	8	Overcast
T.	11	29.566	61	61	—	Overcast	—.516	67	67	—	Showery	—.525	55	55	—	Cloudy
W.	12	—.589	64	56	8	Very Fine	—.579	69	59	10	Cloudy	—.555	56	56	—	Heavy rain
○ Th.	13	—.592	60	54	6	Do. Overcast	—.592	67	50	17	Ditto	—.551	55	55	—	Cloudy & Fine
F.	14	—.479	56	56	—	Rain	—.521	63	63	—	Showery	—.672	52	52	—	Ditto
S.	15	—.752	59	53	6	Very Fine	—.754	58	58	—	Ditto	—.663	56	53	3	Ditto
S.	16	—.911	65	55	10	Ditto [rain	—.831	70	60	10	Cloudy	—.750	55	55	—	Very Fine
M.	17	—.169	57	57	—	Boisterous heavy	—.228	59	59	—	Boisterous Rain	—.326	50	50	—	Clear
T.	18	—.315	59	52	7	Cloudy	—.453	60	53	7	Cloudy	—.654	56	56	—	Cloudy & Fine
W.	19	—.661	56	56	—	Heavy Rain	—.675	69	69	—	Overcast	—.799	62	62	—	Ditto
☾ Th.	20	—.957	64	59	5	Overcast & Fine	—.947	77	68	9	Fine	—.915	62	62	—	Clear & Fine
F.	21	—.891	64	64	—	Foggy	—.848	79	65	14	Very Fine	—.775	63	63	—	Ditto
S.	22	—.755	62	62	—	Ditto	—.777	67	67	—	Slight Rain	—.818	57	57	—	Ditto
S.	23	—.927	61	58	3	Very Fine	—.893	70	54	16	Cloudy & Fine	—.932	52	52	—	Ditto
M.	24	—.976	57	53	4	Ditto	—.939	75	48	27	Very Fine	—.938	50	50	—	Ditto
T.	25	—.968	61	50	11	Ditto	—.921	73	57	16	Ditto	—.907	60	60	—	Rain
W.	26	—.964	66	62	4	Overcast	30.001	72	62	10	Overcast & Fine	—.987	58	58	—	Clear & Fine
● Th.	27	—.936	60	60	—	Foggy	—.011	70	65	5	Ditto	—.957	58	58	—	Ditto
F.	28	—.991	60	60	—	Slight Fog	—.006	69	69	—	Rain	30.044	60	60	—	Ditto
S.	29	30 129	61	61	—	Foggy	—.140	72	67	5	Slight haze	—.074	60	60	—	Foggy
S.	30	—.053	65	64	1	Slight Haze	29.920	79	68	11	Cloudy & Fine	—.042	63	61	2	Overcast
M.	31	—.116	63	58	5	Cloudy	30.076	73	61	12	Ditto	—.040	57	57	—	Cloudy
		29.892	62.35	58.32	4.03		29.879	72.06	59.48	12.58		29.880	57.83	56.38	1.45	

AUGUST.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	73	46	91	38	NE	Little		The temperature of this month was nearly 1° above the mean. In the first week however the range between the extremes of Max. and Min. was sometimes as much as 39°. The amount of rain was as in the preceding month, nearly an inch below the average; although the heat was greater the degree of dryness was less.
2	83	51	103	45	W	Brisk		
3	87	48	102	48	NW	Little		
4	86	56	96	53	E	Ditto		
5	82	55	100	49	——	Brisk		
6	84	62	108	60	——	Little		
7	80	56	106	52	——	Ditto		
8	80	41	104	37	——	Ditto		
9	83	51	102	37	NE	Ditto		
10	86	58	108	55	S	Ditto	.07	With regard to the changes in the state of the weather, the most decided occurred on the 10th; from being hot and dry it then changed to wet. The 17th was boisterous with heavy rain, and the barometer was then lower than at any other time throughout the month.
11	85	55	91	49	W	Ditto	.07	
12	73	51	73	48	——	Ditto	.02	
13	73	49	98	44	SW	Ditto	.03	Mean Pressure from the 3 daily observations 29.883 inches.
14	66	50	80	45	——	Ditto	.06	—— Temperature.....Ditto..... 64°.08
15	59	51	90	46	——	Ditto	.03	—— Dew Point.....Ditto..... 58°.06
16	73	54	95	50	W	Brisk	.22	—— Degree of Dryness....Ditto..... 6°.02
17	63	49	63	45	SW	Strong	.47	—— Degree of Moisture...Ditto..... .822
18	62	50	63	46	——	Brisk	.38	—— Force of Vapour.....Ditto..... .490 inch.
19	70	56	76	52	W	Ditto	.24	Least observed degree of Moisture..... .324
20	79	56	102	53	——	Little		Maximum Temperature in the Shade.... 87°.
21	80	59	103	56	S	Ditto		Minimum Temperature in ditto..... 41°.
22	76	50	102	45	W	Ditto		Maximum Temperature in the Sun ..... 108°.
23	77	46	104	43	SW	Ditto	.01	Minimum of Terrestrial Radiation ..... 36°.
24	76	43	106	36	S	Ditto		Mean Temperature of External Air ..... 64°.34
25	72	58	82	57	SW	Ditto		
26	72	49	80	45	S	Ditto		Winds.
27	73	55	76	51	W	Ditto		North ..... 0 days | N. East..... 3 days
28	74	55	90	50	——	Ditto	.02	South ..... 4 .. | S. East..... 0 ..
29	73	57	94	57	E	Ditto		East..... 6 .. | N. West .... 1 ..
30	82	58	96	55	W	Ditto		West.....10 .. | S. West..... 7 ..
31	74	58	90	52	NE	Ditto		31 days.
	76.00	52.68	92.71	48.22			1.62	Amount of Rain ..... 1.62 inches.

SEPTEMBER.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
T.	1	29.965	66	60	6	Overcast	29.864	78	55	23	Fine	29. 13	62	62	—	Cloudy
W.	2	—.689	68	65	3	Fine	—.632	76	62	14	Cloudy & do.	—.559	60	60	—	Clear & Fine
) Th.	3	—.569	55	55	—	Rain	—.664	61	51	10	Fine	—.727	48	48	—	Ditto
F.	4	—.760	57	55	2	Fine	—.774	61	58	3	Cloudy	—.735	56	56	—	Cloudy, rain
S.	5	—.927	53	53	—	Ditto	—.976	66	56	10	Fine	30.063	48	48	—	Clear
S.	6	30.196	55	55	—	Ditto	30.160	66	52	14	Ditto	—.112	58	53	5	Cloudy & Fine
M.	7	—.066	59	55	4	Very Fine	—.033	67	60	7	Cloudy & do.	—.005	56	56	—	Clear and do.
T.	8	—.105	54	54	—	Dit o	—.101	66	56	10	Very Fine	—.073	56	56	—	Cloudy & fine
W.	9	29.986	60	60	—	Hazy	29.957	65	60	5	Hazy	29.880	61	61	—	D tto
Th.	10	—.917	59	59	—	Ditto	—.962	66	52	14	Very Fine	—.931	54	54	—	Di to
O F.	11	—.933	56	50	6	Slight haze	—.920	64	45	19	Ditto	—.901	48	48	—	Very Fine
S.	12	—.968	50	45	5	Very Fine	—.942	62	39	23	Ditto	—.894	40	40	—	Clear and do.
S.	13	—.856	51	45	6	Ditto	—.765	62	39	23	Ditto	—·643	45	45	—	Cloudy & fine
M.	14	—.455	45	45	—	Hazy	—.342	56	56	—	Rain	—.197	50	50	—	Rain
T.	15	—.290	45	45	—	Fine	—.200	53	45	8	Cloudy & cool	—.100	46	46	—	Cloudy
W.	16	28.884	50	45	5	Clear and do.	28.744	53	53	—	Rain	—.079	51	51	—	Rain
Th.	17	29.470	49	44	5	Clear	29.597	59	42	17	Very Fine	—.718	39	39	—	Clear and fine
(F.	18	—.864	40	40	—	Frosty ha z	—.875	59	48	11	Ditto	—.856	48	48	—	Overcast
S.	19	—.837	50	48	2	Cloudy	—.860	57	48	9	Cloudy & cool	—.930	40	40	—	Clear and fine
S.	20	30.002	42	39	3	Fine but cool	—.996	58	45	13	Do. and fine	—.995	44	44	—	Ditto
M.	21	29.988	52	52	—	Fine	—.933	62	46	16	Fine	—.735	51	51	—	Rain
T.	22	—.497	52	52	—	Rain	—.485	51	51	—	Rain	—.482	40	40	—	Clear and fine
W.	23	—.301	48	48	—	Ditto	—.401	58	49	9	Cloudy & fine	—.470	44	44	—	Ditto
Th.	24	—.455	49	49	—	Cloudy & Fine	—.494	57	57	—	Heavy showers	—.571	49	49	—	Heavy rain
● F.	25	—.702	50	50	—	Rain	—.881	53	53	—	Cold & wet	—.984	45	45	—	Clear
S.	26	30.026	47	47	—	Slightly overcast	—.971	60	53	7	Fine, Overcast	—.874	52	52	—	Rain
S.	27	29.967	52	52	—	Fine	—.899	63	58	5	Cloudy & fine	—.936	51	51	—	Clear
M.	28	—.757	55	55	—	Overcast	—.674	58	58	—	Heavy Rain	— 514	60	60	—	Rain
T.	29	—.583	51	51	—	Clear	—.593	54	49	5	Fine	—·677	48	48	—	Clear and fine
W.	30	—.934	47	44	3	Do. and Fine	—.941	55	50	5	Ditto	—·947	51	51	—	Overcast
		29.764	52.23	50.56	1.67		29.787	60.86	51.20	9.66		29.743	50.03	49.87	0.16	

SEPTEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	80	58	100	54	E	Brisk		
2	78	53	80	52	S	Ditto	.22	
3	66	43	75	38	W	Little	.02	
4	62	46	70	40	SW	Brisk	.13	
5	68	40	80	34	W	Little		
6	74	53	98	48	——	Ditto		
7	66	44	86	37	SW	Ditto	.02	
8	71	51	94	45	W	Ditto	.01	
9	68	59	76	59	S	Brisk	.02	
10	72	45	96	39	W	Little		
11	69	40	93	34	——	Brisk		
12	66	35	92	26	——	Little		
13	65	34	94	28	——	Ditto		
14	54	43	58	32	E	Little	.40	
15	59	41	79	35	W	Ditto	.05	
16	57	43	76	39	SW	Brisk	.19	
17	62	29	87	23	W	Ditto		
18	62	48	83	43	NE	Little		
19	57	38	73	30	N	Brisk		
20	62	32	83	27	W	Little		
21	63	52	83	48	S	Ditto	.10	
22	53	40	54	33	SW	Ditto	.40	
23	60	39	80	28	S	Brisk	.02	
24	60	48	68	47	W	Little	.36	
25	57	35	75	33	N	Brisk	.04	
26	63	42	88	38	SW	Little	.16	
27	65	49	86	45	W	Brisk		
28	59	48	62	45	SW	Little	.30	
29	60	42	79	36	——	Brisk	.01	
30	60	51	80	49	W	Little		
	63.93	44.03	80.26	38.83			2.45	

Nearly the average quantity of rain fell in the course of this month; but in the intervals the air was found to possess a greater degree of dryness than is usual at this period of the season. The wind was from the west nearly half the days in the month. The temperature was about 3° below the average; and frost occured so as to greatly injure the growth and flowering of the Dahlias as early as the 17th; on the day previous to this the barometer was very low.

In the first fortnight the weather was favourable for ripening the productions of the garden; but after this the coldness of the nights tended to render the process imperfect.

Mean Pressure from the 3 daily observations 29.764 inches.
—— Temperature ..... Ditto ..... 54°.37
—— Dew Point ..... Ditto ..... 50°.54
—— Degree of Dryness .... Ditto ..... 3°.83
—— Degree of Moisture .. Ditto ..... .875
—— Force of Vapour ..... Ditto ..... .407 inch.
Least observed degree of Moisture ..... .457
Maximum Temperature in the Shade .... 80°.
Minimum Temperature in ditto ..... 29°.
Maximum Temperature in the Sun ..... 100°.
Minimum of Terrestrial Radiation ..... 23°.
Mean Temperature of External Air ..... 53°.98

WINDS.

North..... 2	days	N. East 1	days
South..... 4	..	S. East 0	..
East.....2	..	N. West....0	..
West 14	..	S. West 7	..

30 days.

Amount of Rain.....2.45 inches.

OCTOBER.

	Morning.						Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
Th.	1	29.966	55	50	4	Overcast	29.982	58	52	6	Overcast	30.039	53	53	—	Overcast
F.	2	30.117	52	48	4	Ditto	30.124	59	48	11	Fine	—.039	47	47	—	Clear & Fine
☽ S.	3	—.153	44	44	—	Clear	—.108	55	41	14	Very Fine	—.061	47	47	—	Overcast
S.	4	—.045	51	45	6	Cloudy	—.033	53	53	—	Rain	—.056	45	45	—	Rain
M.	5	—.058	48	48	—	Ditto	29.997	56	52	4	Very Fine	—.073	45	45	—	Ditto
T.	6	—.094	39	39	—	Clear	30.082	53	53	—	Cloudy & Fine	—.092	35	35	—	Clear & Fine
W.	7	—.086	33	33	—	Frosty&Foggy	—.071	54	41	13	Ditto	—.121	35	35	—	Ditto
Th.	8	—.228	34	34	—	Ditto	—.190	52	50	2	Very Fine	—.241	39	39	—	Fine
F.	9	—.293	34	34	—	Ditto	—.274	51	46	5	Hazy	—.260	33	33	—	Clear & Ditto
S.	10	—.280	33	33	—	Dense Fog	—.254	55	45	10	Very Fine	—.262	38	38	—	Ditto
⊙ S.	11	—.323	50	47	3	Hazy	—.338	58	50	8	Hazy	—.401	45	45	—	Ditto
M.	12	—.539	41	41	—	Ditto	—.543	56	50	6	Very Fine	—.549	40	40	—	Ditto
T.	13	—.548	36	36	—	Dense Fog	—.328	55	49	6	Ditto	—.445	39	39	—	Ditto
W.	14	—.359	36	36	—	Ditto	—.314	58	50	8	Ditto	—.271	40	40	—	Ditto
Th.	15	—.225	39	39	—	Foggy	—.155	55	45	10	Overcast	—.071	39	39	—	Fine
F.	16	29.915	45	45	—	Fine	29.813	56	52	4	Ditto	29.755	50	50	—	Overcast
☾ S.	17	—.757	54	54	—	Rain	—.827	57	55	2	Ditto	—.965	47	47	—	Ditto
S.	18	—.977	50	50	—	Overcast	—.938	54	48	6	Cloudy	—.755	50	50	—	Rain
M.	19	—.664	53	53	—	Do. & Windy	—.698	56	49	7	Ditto	—.803	49	44	5	Clear & Fine
T.	20	30.052	44	40	4	Clear	30.075	54	40	14	Clear	30.075	37	37	—	Ditto
W.	21	—.124	39	39	—	Ditto	—.102	56	41	15	Fine	—.046	41	41	—	Cloudy
Th.	22	29 897	46	46	—	Hazy	29.810	52	52	—	Rain	29.861	45	45	—	Clear & Fine
F.	23	—.933	41	41	—	Fine	—.885	51	46	5	Overcast	—.662	48	48	—	Rain
S.	24	—.523	42	42	—	Clear	—.535	50	41	9	Cloudy	—.586	38	38	—	Clear
● S.	25	—.746	40	40	—	Ditto	—.773	48	37	11	Very Fine	—.877	34	34	—	Ditto
M.	26	—.875	34	34	—	Overcast	—.828	48	43	5	Ditto	—.126	44	44	—	Slight Rain
T.	27	—.204	51	51	—	Heavy Rain	—.160	49	49	—	Cloudy	—.160	36	36	—	Clear
W.	28	—.114	40	40	—	Clear	—.167	48	43	5	Fine	—.266	42	42	—	Fine
Th.	29	—.328	45	45	—	Foggy, Rain	—.262	50	50	—	Rain	—.369	36	36	—	Very Foggy
F.	30	—.477	40	40	—	Clearing	—.488	52	48	4	Fine, Cloudy	—.520	42	42	—	Clear
S.	31	—.516	45	45	—	Foggy	—.515	53	53	—	Cloudy	—.566	40	40	—	Ditto
		29.945	43.03	42.36	0.67		29.954	53.61	47.48	6.13		29.915	41.90	41.74	0.16	

OCTOBER.

Temperature.					Wind.		Rain.	
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	Remarks.
1	58	46	65	41	W	Little		
2	61	36	81	30	NW	Ditto		
3	56	46	78	42	N	Ditto		
4	57	45	72	41	NE	Ditto	.02	
5	57	33	79	26	N	Ditto	.07	
6	53	30	87	26	W	Ditto		
7	58	30	80	26	N	Ditto		
8	60	30	85	23	NE	Ditto		
9	59	30	86	23	S	Ditto		
10	60	35	85	29	E	Ditto		
11	58	35	80	29	——	Brisk		
12	60	31	79	25	——	Little		
13	63	31	88	28	W	Ditto		
14	66	32	89	27	NW	Ditto		
15	57	36	74	32	——	Ditto		
16	56	51	74	50	W	Ditto	.02	
17	56	46	60	44	N	Ditto		
18	56	49	72	48	W	Brisk	.12	
19	57	42	72	36	NW	Ditto		
20	57	29	73	24	N	Ditto		
21	54	39	72	31	——	Little	.01	
22	53	38	70	32	NW	Ditto	.02	
23	53	40	79	35	W	Ditto	.27	
24	53	35	69	29	NW	Brisk	.16	
25	51	28	72	21	——	Ditto		
26	52	43	60	41	——	Little	.28	
27	50	30	54	24	W	Ditto	.12	
28	52	36	69	30	SW	Ditto	.10	
29	50	32	55	28	E	Ditto	.12	
30	56	36	67	30	SE	Ditto	.03	
31	57	36	80	29	——	Ditto	.01	
	56.32	36.96	74.39	31.61			1.35	

The amount of rain was about an inch less than usual. Very little fell during the first three weeks, in which period the nights were frequently frosty, and the morning foggy; the days clearing up, with hot sunshine. The remainder of the month was wet, and occasionally dense fogs prevailed. In the last month West and S. West winds were predominant; in the present, West, N. West, and North were the points from which it proceeded for a much greater length of time than it usually does.

Mean Pressure from the 3 daily observations 29.938 inches
—— Temperature ..... Ditto ..... 46°.18
—— Dew Point ..... Ditto ..... 43°.86
—— Degree of Dryness ... Ditto ..... 2°.32
—— Degree of Moisture ... Ditto ..... .923
—— Force of Vapour ..... Ditto ..... .326 inch.
Least observed degree of Moisture ..... .593
Maximum Temperature in the Shade .... 66°.
Minimum Temperature in ditto ..... 28°.
Maximum Temperature in the Sun ..... 89°.
Minimum of Terrestrial Radiation ..... 21°.
Mean Temperature of External Air ..... 46°.64

Winds.

North	6 days.	N. East	2 days.
South	1 ..	S. East	2 ..
East	4 ..	N. West	8 ..
West	7 ..	S. West	1 ..

31 days.

Amount of Rain.....1.35 inches.

NOVEMBER.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
S.	1	29·592	46	46	—	Foggy	29·495	52	49	3	Cloudy & Fine	29·337	49	49	—	Rain
☽ M.	2	—·480	50	50	—	Showery	—·515	56	51	5	Fine	—·455	47	47	—	Overcast
T.	3	—·404	50	50	—	Foggy	—·376	56	51	5	Hazy	—·343	42	42	—	Foggy
W.	4	—·275	47	47	—	Dense Fog	—·200	55	48	7	Clear	—·339	45	45	—	Clear & Fine
Th.	5	—·152	51	51	—	Rain	—·250	54	52	2	Fine	—·232	45	45	—	Rain
F.	6	—·073	48	48	—	Ditto	28·921	50	50	—	Rain	28·997	50	50	—	Ditto
S.	7	—·083	49	49	—	Ditto	29·145	51	51	—	Heavy Rain	29·154	45	45	—	Clear & Fine
S.	8	—·336	45	45	—	Clear	—·325	53	49	4	Fine	—·299	48	48	—	Clear
○ M.	9	—·077	47	47	—	Ditto	—·406	52	50	2	Boisterous	—·147	44	44	—	Fine
T.	10	—·046	41	41	—	Ditto	—·083	48	48	—	Cloudy & Fine	—·263	42	42	—	Ditto
W.	11	—·308	38	38	—	Hazy	—·207	48	48	—	Rain	—·286	41	41	—	Rain
Th.	12	—·490	38	38	—	Clear	—·516	48	48	—	Fine	—·316	44	44	—	Overcast
F.	13	28·818	51	51	—	Rain	28·669	53	53	—	Boisterous, rain	28·750	48	48	—	Stormy
S.	14	—·992	44	44	—	Clear	29·097	49	49	—	Clear	29·287	40	40	—	Clear
S.	15	29·509	34	34	—	Ditto	—·463	55	55	—	Fine	—·482	44	44	—	Overcast
☾ M.	16	—·059	58	58	—	Cloudy, windy	—·108	61	61	—	Cloudy	—·234	53	53	—	Cloudy
T.	17	—·547	45	45	—	Slightly overcast	—·505	48	48	—	Rain	—·138	50	50	—	Stormy
W.	18	—·789	40	40	—	Ditto	—·766	40	40	—	Ditto	—·605	38	38	—	Rain
Th.	19	—·771	40	40	—	Rain	—·802	44	44	—	Cloudy	—·939	35	35	—	Fine
F.	20	30·078	30	30	—	Very Clear	30·078	42	42	—	Very Fine	30·061	38	38	—	Overcast
S.	21	29·604	44	44	—	Stormy with rain	29·307	45	45	—	Cloudy	29·261	42	42	—	Fine
S.	22	—·778	40	36	4	Clear & windy	—·836	44	36	8	Fine	30·033	38	38	—	Ditto
M.	23	30·056	38	38	—	Hazy	—·988	44	44	—	Ditto	29·980	48	48	—	Ditto
● T.	24	—·088	49	49	—	Fine	30·133	53	49	4	Cloudy	30·242	40	40	—	Ditto & Clear
W.	25	—·373	33	33	—	Dense Fog	—·372	45	45	—	Foggy	—·400	34	34	—	Ditto
Th.	26	—·433	27	27	—	Sharp Frost	—·390	40	40	—	Fine	—·382	31	31	—	Ditto
F.	27	—·400	25	25	—	Frosty dense Fog	—·368	32	32	—	Foggy	—·370	29	29	—	Very dense fog
S.	28	—·395	25	25	—	Ditto	—·376	29	29	—	Ditto	—·328	26	26	—	Ditto
S.	29	—·326	25	25	—	Ditto	—·255	34	24	—	Ditto	—·185	32	32	—	Fine
M.	30	—·066	44	44	—	Overcast	—·045	51	51	—	Drizzly	29·932	50	50	—	Cloudy
		29·613	41·40	41·27	0·13		29·600	47·73	46·40	1·33		29·592	41·93	41·93	0·00	

NOVEMBER.

Temperature.					Wind.		Rain.	Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In. Pts.	
1	56	46	63	44	NE	Brisk	.30	This month proved exceedingly damp throughout. The quantity of rain was upwards of an inch in excess, and fell during the first three weeks. The barometer averaged very low, the mercurial column being frequently below 29 inches. It however stood high during the last week, with easterly winds, frosts and dense fog. The mean temperature was a little above the average; and there was very little frost up to the 23rd, South and South West winds being till then prevalent, and frequently very boisterous.
2	57	45	73	40	S	Ditto		
3	56	40	62	34	E	Little	.02	
4	56	46	60	41	W	Strong	.16	
5	55	41	64	36	S	Brisk	.23	
6	51	41	55	36	SW	Ditto	.48	
7	58	41	73	36	——	Ditto	.10	
8	55	41	72	34	——	Ditto	.20	
9	53	41	65	38	——	Strong	.10	
10	51	37	63	29	NW	Brisk	.01	Mean Pressure from the 3 daily observations 29.601 inches
11	49	36	50	31	SW	Little	.30	—— Temperature.....Ditto..... 43°.68
12	54	39	56	33	S	Ditto	.35	—— Dew Point.....Ditto..... 43°.20
13	55	44	55	40	——	Strong	.22	—— Degree of Dryness.....Ditto..... 0°.48
14	50	28	52	23	W	Brisk		—— Degree of Moisture.....Ditto..... .981
15	56	38	59	34	SW	Little	.11	—— Force of Vapour.....Ditto..... .318 inch.
16	62	44	69	37	——	Strong		Least observed degree of Moisture..... .741
17	56	38	56	35	S	Little	.40	Maximum Temperature in the Shade..... 58°.
18	44	34	44	30	NE	Ditto	.41	Minimum Temperature in ditto.. ..... 22°.
19	44	30	45	25	——	Brisk	.01	Maximum Temperature in the Sun..... 73°.
20	43	37	43	32	W	Little	.02	Minimum of Terrestrial Radiation..... 14°.
21	46	39	46	34	SW	Brisk	.16	Mean Temperature of External Air..... 43°.16
22	43	30	47	23	N	Little	.01	
23	44	39	47	38	SW	Ditto		
24	56	28	61	23	NE	Ditto		
25	46	24	48	17	SE	Ditto		
26	44	22	48	14	E	Ditto		
27	34	23	34	15	NE	Ditto		
28	35	22	35	14	——	Ditto		
29	36	30	40	24	E	Ditto		
30	54	50	55	48	SW	Ditto		
	49.96	36.46	54.66	31.27			3.59	

WINDS.

North.....	1 days	N. East.....	6 days
South	5 ..	S. East.....	1 ..
East	3 ..	N. West	1 ..
West	3 ..	S. West	10 ..

30 days.

Amount of Rain .....3.59 inches.

DECEMBER.

		Morning.					Noon.					Night.				
1840.	Days.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.	Barom.	Hygrometer.			Weather.
T.	1	29.924	51	51	—	Hazy [cast	29.941	56	56	—	Overcast	29.998	45	45	—	Overcast
☽ W.	2	30.137	41	41	—	Slightly Over-	30.203	46	46	—	Very Fine	30.311	38	38	—	Clear
Th.	3	—.493	32	32	—	Frosty	—.493	41	38	3	Ditto	—.493	28	28	—	Ditto
F.	4	—.465	25	25	—	Sharp Frost	—.434	37	37	—	Overcast	—.375	30	30	—	Overcast
S.	5	—.353	35	35	—	Hazy	—.312	41	41	—	Hazy	—.250	38	38	—	Ditto
S.	6	—.171	39	39	—	Foggy	—.089	41	41	—	Ditto [cold	—.018	28	28	—	Fine
M.	7	29.817	39	39	—	Overcast	29.687	40	40	—	Overcast and	29.435	33	33	—	Overcast
T.	8	—.229	40	40	—	Slightly Ditto	—.243	43	43	—	Rain	—.384	38	38	—	Fine
○ W.	9	—.692	28	28	—	Frosty	—.805	40	40	—	Clear	—.923	28	28	—	Clear
Th.	10	—.905	36	36	—	Thawing	—.910	41	41	—	Hazy	—.892	35	35	—	Overcast
F.	11	—.941	38	38	—	Hazy	—.897	36	36	—	Overcast	—.947	35	35	—	Ditto
S.	12	30.086	36	35	1	Cloudy [cold	30.147	38	38	—	Ditto & cold	30.195	35	35	—	Ditto
S.	13	—.248	32	32	—	Overcast and	—.257	34	34	—	Ditto	—.250	32	32	—	Ditto
M.	14	—.227	24	20	4	Sharp Frost	—.225	32	18	14	Cold & dry	—.207	25	25	—	Ditto
☾ T.	15	—.234	24	22	2	Ditto	—.245	26	16	10	Dry & Frosty	—.202	23	23	—	Clear
W.	16	—.154	26	26	—	Overcast	—.045	30	30	—	Snowing	29.818	31	31	—	Snowing
Th.	17	29.762	32	32	1	Snowing	29.760	24	24	—	Cloudy	—.758	20	20	—	Overcast
F.	18	—.600	25	25	—	Frosty	—.542	36	36	—	Overcast	—.500	29	29	—	Ditto
S.	19	—.592	31	25	6	Overcast	—.579	36	36	—	Hazy	—.644	33	33	—	Ditto
S.	20	—.826	34	30	4	Ditto	—.872	37	28	9	Ditto	30.108	36	36	—	Ditto
M.	21	30.247	35	30	5	Ditto	30.255	37	30	7	Cloudy	—.303	34	34	—	Ditto
T.	22	—.329	32	25	7	Ditto	— 301	32	27	5	Clear & cold	—.255	28	28	—	Clear
● W.	23	—.179	21	20	1	Severe Frost	—.118	29	24	5	Do. & Frosty	—.055	23	23	—	Ditto
Th.	24	—.088	31	27	4	Clear	—.104	36	31	5	Clear	—.162	28	28	—	Ditto
F.	25	—.320	20	20	—	Severe Frost	—.308	25	25	—	Foggy	—.366	19	19	—	Dense Fog
S.	26	—.554	25	25	—	Thick hoar Frost	—.553	30	30	—	Hazy	—.595	28	28	—	Overcast
S.	27	—.644	30	30	—	Overcast	—.566	31	31	—	Ditto	—.532	31	31	—	Ditto
M.	28	—.400	30	30	—	Hazy	—.351	32	30	2	Ditto	—.275	24	24	—	Dense Fog
T.	29	—.260	24	24	—	Foggy	—.248	32	32	—	Foggy	—.306	32	32	—	Clear
W.	30	—.412	22	22	—	Clear	— 361	36	31	5	Cloudy	—.164	36	36	—	Rain
☾ Th.	31	29.873	41	41	—	Cloudy	29.892	44	40	4	Very clear	29.990	38	38	—	Clear & Fine
		30.102	31.58	30.48	1.10		30.088	36.09	33.87	2.22		30.087	30.31	30.31	0.00	

DECEMBER.

Temperature.					Wind.		Rain.		Remarks.
Days.	Max.	Min.	Sun.	Rad.	Direction.	Force.	In.	Pts.	
1	56	38	57	34	W	Little			This month has proved colder than any December experienced in the present century, the mean temperature exactly corresponding with the freezing point. North-east winds were prevalent; and the deposition from rain or melted snow was very little. Thick hoar frosts and fog were general in the last week. On the 25th in particular the fog was very dense all day, and the frost at night severe. By the end of the month the frost had penetrated to the depth of 8 inches in kitchen garden soil, and in turf about 4 inches.
2	51	30	45	25	N	Ditto			
3	43	22	50	16	NE	Ditto			
4	41	29	42	25	SW	Ditto			
5	42	37	43	35	W	Ditto			
6	42	25	42	18	SW	Ditto			
7	41	33	41	30	S	Brisk			
8	43	26	43	20	——	Little		.10	
9	45	26	46	22	SW	Ditto			
10	44	36	45	30	SE	Ditto			
11	37	32	38	26	E	Brisk			
12	38	32	38	30	NE	Little			
13	37	24	37	19	——	Ditto			
14	32	23	33	15	——	Brisk			
15	26	18	27	10	——	Little			
16	33	28	33	27	NW	Ditto			
17	28	17	28	14	——	Ditto			
18	33	28	33	26	NE	Brisk			
19	34	32	34	31	——	Little		.19	
20	36	34	34	32	SE	Brisk			
21	36	30	36	25	NE	Ditto			
22	33	19	34	10	——	Ditto			
23	32	21	33	15	——	Little			
24	36	16	38	10	——	Ditto			
25	28	15	28	13	E	Ditto			
26	31	27	31	25	N	Ditto			
27	33	29	33	26	NE	Ditto			
28	32	18	32	13	E	Ditto			
29	36	19	37	14	W	Ditto			
30	40	31	40	29	——	Ditto		.16	
31	45	35	48	32	NW	Brisk			
	37·55	26.45	38.03	22.48			0.45		

Mean Pressure from the 3 daily observations 30.092 inches.
—— Temperature .....Ditto..... 32°.66
—— Dew Point .....Ditto..... 31°.55
—— Degree of Dryness .....Ditto..... 1°.11
—— Degree of Moisture .....Ditto..... .959
—— Force of Vapour.....Ditto..... .212 inch.
Least observed degree of Moisture ..... .606
Maximum Temperature in the Shade..... 56.°
Minimum Temperature in ditto..... 15.°
Maximum Temperature in the Sun..... 57.°
Minimum of Terrestrial Radiation..... 10.°
Mean Temperature of External Air..... 32°.

WINDS.

North	2 days	N. East	12 days
South	2 ..	S. East	2 ..
East	3 ..	N. West	3 ..
West	4 ..	S. West	3 ..

31 days.

Amount of Rain .....0.45 inch.

Monthly Mean Pressure, Temperature, and Dew Point, &c. of 1840; deduced from the Observations recorded in the preceding Journal.

1840.	Pressure.								Temperature.											
					Mean at			Mean of the three Observations.	In the Shade.			Mean at			Mean of the three Observs	In Sun's Rays.		Terrestrial Radiation		Med. of Sun and Rad^{n}.
Months.	Max.	Min.	Med.	Range of Barom.	Morn.	Noon.	Night.		Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.	
Jan. .	30.588	28.742	29.831	1.846	29.827	29.821	29.836	29.828	55	12	39.24	38.54	43.45	38.16	40.05	56	39	49	1	38.45
Feb. .	30.661	28.597	29.954	2.064	29.942	29.940	29.970	29.950	53	24	39.30	37.69	42.65	37.68	39.34	61	35	41	16	39.01
March	30.726	29.823	30.273	0.903	30.278	30.258	30.273	30.269	56	19	39.70	37.03	44.61	35.35	38.99	66	44	39	12	40.17
April	30.416	29.480	30.080	0.936	30.078	30.059	30.091	30.076	81	25	49.83	48.23	62.26	42.90	51.13	99	55	42	16	51.44
May .	30.393	29.425	29.907	0.968	29.914	29.889	29.880	29.894	80	34	56.16	56.16	64.32	52.32	57.60	95	69	54	27	61.66
June.	30.195	29.659	29.966	0.536	29.984	29.977	29.939	29.966	84	41	60.94	61.86	68.10	57.73	62.56	100	70	56	34	66.25
July .	30.269	29.434	29.839	0.835	29.851	29.845	29.836	29.844	80	41	60.06	61.35	67.58	56.03	61.65	105	71	56	34	66.76
Aug.	30.223	29.169	29.884	1.054	29.892	29.879	29.880	29.883	87	41	64.34	62.35	72.06	57.83	64.08	108	63	60	36	70.46
Sept.	30.196	28.744	29.752	1.452	29.764	29.787	29.743	29.764	80	29	53.98	52.23	60.86	50.03	54.37	100	54	59	23	59.54
Oct. .	30.549	29.126	29.927	1.423	29.945	29.954	29.915	29.938	66	28	46.64	43.03	53.61	41.90	46.18	89	54	50	21	53.00
Nov..	30.433	28.669	29.602	1.764	29.613	29.600	29.592	29.601	58	22	43.16	41.40	47.73	41.93	43.68	73	34	48	14	42.96
Dec. .	30.644	29.229	30.109	1.415	30.102	30.088	30.087	30.092	56	15	32.00	31.58	36.09	30.31	32.66	57	27	35	10	30.25
Aver.	30.458	29.174	29.927	1.284	29.932	29.925	29.920	29.926	69.66	27.59	48.78	47.62	55.27	45.18	49.36	84.08	51.25	49.08	20.33	51.66

1840.	Hygrometer indicating Dew Point.								Scale of the Winds.								Rain.	
	Mean Dew Point at			Mean Dew Point.	Mean Force of Vapour.	Mean degree of Dryness.	Mean degree of Moisture.	Least degree of Moisture.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Days.	
Months.	Morn.	Noon.	Night.															In. Pts.
Jan. .	37.96	42.07	37.90	39.31	.272	0.74	971	712	1	3	2	1	6	7	10	1	31	2.48
Feb. .	35.97	39.24	36.41	37.21	.257	2.13	937	658	0	4	8	1	2	11	1	2	29	1.25
March	34.90	34.68	33.68	34.42	.235	4.57	864	369	7	10	6	0	1	0	3	4	31	0.28
April	44.63	42.66	40.43	42.57	.310	8.56	747	365	6	2	6	2	3	4	4	3	30	0.06
May .	52.16	52.10	50.39	51.55	.421	6.05	812	404	4	1	6	1	6	7	5	1	31	2.18
June.	57.16	55.17	55.53	55.95	.491	6.61	811	450	0	0	1	1	2	9	13	4	30	1.48
July .	56.00	53.71	54.03	54.58	.469	7.07	797	404	0	2	0	0	2	12	10	5	31	1 68
Aug.	58.32	59.48	56.38	58.06	.490	6.02	822	324	0	3	6	0	4	7	10	1	31	1.62
Sept.	50.56	51.20	49.87	50.54	.407	3.83	875	457	2	1	2	0	4	7	14	0	30	2.45
Oct.	42.36	47.48	41.74	43.86	.326	2.32	923	593	6	2	4	2	1	1	7	8	31	1.35
Nov.	41.27	46.40	41.93	43.20	.318	0.48	981	741	1	6	3	1	5	10	3	1	30	3.59
Dec. .	30.48	33.87	30.31	31.55	.212	1.11	959	606	2	12	3	2	2	3	4	3	31	0.45
Aver.	45.15	46.50	44.05	45.23	.350	4.12	833	507	29	46	47	11	38	78	84	33	366	18.87

The preceding Table, as regards Temperature, and the Dew Point, is in terms of Fahrenheit's scale; the following are reductions of the same to those of the Centigrade and Reaumur's Thermometers.

Centigrade Thermometer.

1840.	Temperature.												Hygrometer indicating Dew Point.				
	In the Shade.			Mean at			Mean of the three Observations	In Sun's Rays.		Terrestrial Radiation.		Med. of Sun and Radiation.	Mean Dew Point at			Mean Dew Point.	Mean degree of Dryness.
Months.	Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.		Morn.	Noon.	Night.		
Jan. .	12.77	-11.11	4.02	3.63	6.36	3.42	4.47	13.33	3.88	9.44	-17.22	3.58	3.32	5.59	3.27	4.01	0.41
Feb. .	11.66	-4.44	4.05	3.16	5.91	3.15	4.07	16.11	1.66	5.00	-8.88	3.89	2.18	4.02	2.45	2.89	1.18
March	13.33	-7.22	4.27	2.79	7.00	1.86	3.88	18.88	6.66	3.88	-11.11	4.53	1.61	1.48	0.93	1.34	2.53
April	27.22	-3.88	9.90	9.01	16.81	6.05	10.62	37.22	12.77	5.55	-8.88	10.78	7.01	5.91	4.68	5.87	4.75
May .	26.66	1.11	3.42	13.42	17.95	11.28	14.22	35.00	20.55	12.22	-2.77	16.47	11.20	11.16	10.21	10.86	3.36
June.	28.88	5.00	16.07	16.57	20.05	14.29	16.97	37.77	21.11	13.33	1.11	19.02	13.97	12.87	12.96	13.30	3.67
July .	26.66	5.00	15.58	16.30	19.76	13.35	16.47	40.55	21.66	13.33	1.11	19.31	13.33	12.06	12.23	12.54	3.92
Aug.	30.55	5.00	17.96	16.86	22.05	14.33	17.82	42.22	17.22	15.55	2.22	21.36	14.62	15.26	13.54	14.57	3.34
Sept.	26.66	-1.66	12.19	11.23	16.03	10.01	12.42	37.77	12.22	15.00	-5.00	15.30	10.31	10.66	9.92	10.30	2.12
Oct. .	18.88	-2.22	8.13	6.12	12.05	5.50	7.87	31.66	12.22	10.00	-6.11	11.66	5.75	8.60	5.41	6.58	1.28
Nov .	14.44	-5.55	6.20	5.22	8.73	5.51	6.48	22.77	1.11	8.88	-10.00	6.08	5.15	8.00	5.51	6.22	0.26
Dec. .	13.33	-9.44	0.00	-0.23	2.27	-0.93	0.36	13.88	-2.77	1.66	-12.22	-0.97	-0.84	1.03	-0.93	-0.25	0.61
Aver.	20.92	-2.45	9.31	8.67	12.92	7.32	9.64	28.93	10.69	9.48	-6.48	10.92	7.30	8.05	6.69	7.35	2.28

Reaumur's Thermometer.

1840.	Temperature.												Hygrometer indicating Dew Point.				
	In the shade.			Mean at			Mean of the three Observations.	In Sun's Rays.		Terrestrial Radiation.		Med. of Sun and Radiation.	Mean Dew Point at			Mean Dew Point.	Mean degree of dryness.
Months.	Max.	Min.	Med.	Morn.	Noon.	Night.		Max.	Min.	Max.	Min.		Morn.	Noon.	Night.		
Jan. .	10.22	-8.88	3.21	2.90	5.08	2.73	3.57	10.66	3.11	7.55	-13.77	2.86	2.64	4.47	2.62	3.24	0.32
Feb. .	9.33	-3.55	3.24	2.52	4.72	2.52	3.26	12.88	1.33	4.00	-7.11	3.11	1.76	3.21	1.95	2.31	0.93
March.	10.66	-5.77	3.42	2.23	5.60	1.48	3.10	15.11	5.33	3.11	-8.88	3.62	1.28	1.18	0.74	1.06	2.02
April.	21.77	-3.11	7.91	7.21	13.44	4.84	8.49	29.77	10.22	4.44	-7.11	8.63	5.61	4.73	3.74	4.69	3 79
May .	21.33	0.88	10.73	10.73	14.36	9.02	11.37	28.00	16.44	9.77	-2.22	13.17	8.95	8.92	8.17	8.68	2.68
June.	23.11	4.00	12.85	13.25	16.04	11.43	13.57	30.22	16.88	10.66	0.88	15.22	11.18	10.29	10.45	10.64	2.93
July .	21.33	4.00	12.46	13.03	15.80	10.67	13.16	32.44	17.33	10.66	0.88	15.44	10.66	9.64	9.78	10.02	3.14
Aug.	24.44	4.00	14.37	13.48	17.79	11.47	14.25	33.77	13.77	12.44	1.77	17.08	11.69	12.21	10.82	11.57	2.66
Sept.	21.33	-1.33	9.76	8.98	12.82	8.01	9.93	30.22	9.77	12.00	-4.00	12.24	8.24	8.52	7.93	8.24	1.69
Oct. .	15.11	-1.77	6.50	4.89	9.60	4.40	6.30	25.33	9.77	8.00	-4.88	9.33	4.60	6.87	4.32	5.26	1.02
Nov.	11.55	-4.44	4.95	4.17	6.98	4.41	5.18	18.22	0.88	7.11	-8.00	4.63	4.12	6.39	4.41	4.88	0.21
Dec. .	10.66	-7.55	0.00	-0.18	1.81	-0.74	0.29	11.11	-2.22	1.33	-9.77	-0.77	-0.67	0.82	-0.69	-0.20	0.48
Aver.	16.73	-1.95	7.45	6.93	10.34	5.85	7.71	23.14	8.55	7.58	-5.18	8.73	5.84	6.45	5.35	5.87	1.82

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